

## NEWS SUMMARY

### GENERAL

#### Thatcher condemns IRA nail bomb

Prime Minister Margaret Thatcher condemned Saturday's IRA nail bomb attack in London as cold, callous, brutal and sub-human.

She visited two hospitals where 16 were detained after the attack, which killed one and injured 40, including more than 20 Irish Guards. Police confirmed the bomb, near Chelsea Barracks, was triggered by remote control.

Irish Prime Minister Dr Garret FitzGerald, who meets Mrs Thatcher in London next month, may propose an Anglo-Irish council to examine constitutional issues. *Back Page*

#### 'Children killed'

Iran's Mujahedin radicals claimed nearly 100 children wounded in Tehran demonstrations were executed last week. Meanwhile Tehran radio said 82 anti-government militants had been shot.

#### Flemish clashes

Belgian police arrested 19 in clashes with 1,500 Flemish demonstrators in the Voeren region, focus of rivalry between French and Flemish speakers.

#### Asylum bid fails

An armed man drove into the U.S. Embassy in Moscow seeking political asylum but left after five hours, to be arrested by police.

#### N-weapon study

Uranium Institute said agreements between nuclear customer and supplier countries may produce an international consensus for preventing proliferation of nuclear weapons.

#### Union on attack

Union leader Edward Mabe accused the French Government of backsliding over pre-election pledges on nuclear power and labour laws. *Page 2*

#### Polish offer

Poland suggested a new mixed commission with Solidarity and other unions to discuss prices, policy, market supplies and rationing. *Page 2*

#### EEC poll pledge

Greek socialist leader Andreas Papandreu said his party would hold a referendum on leaving the EEC if it wins next Sunday's general election.

#### Trench boy saved

A 15-year-old boy was "critical" in hospital after nearly being buried alive when trench walls on a Stretford rubbish tip collapsed on him.

#### Fastest Briton

Richard Noble, 35, succeeded Donald Campbell as the fastest Briton on land by driving at an average 412.118 mph over a two-way flying kilometre at Bonneville salt flats, Utah.

#### Paperweight

Paper from Derbyshire County Council's committee is piling up in corridors, toilets and the council chambers. The council has been told the floors may not take the weight.

#### Briefly

Distributors of anti-government leaflets were arrested in Shanghai.

About 6,000 demonstrated against plans to build more runways at Tokyo's new airport.

Storm cut the Simplon tunnel rail link between Switzerland and Italy for several hours.

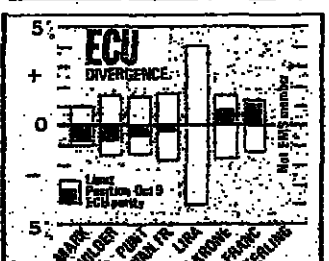
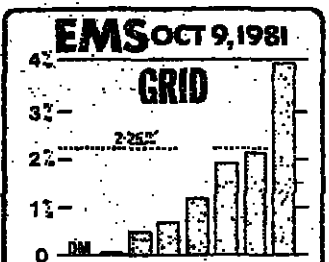
### BUSINESS

#### Strike to halt Liverpool docks

LIVERPOOL port will be at a complete standstill from this morning when 3,500 registered dockers start an all-out indefinite strike. *Back Page*

ATTORNEY-GENERAL Sir Michael Havers is expected to make a statement today about allegations of financial irregularities at the De Lorean sports car company. *Back Page*

EUROPEAN currencies benefited from the weakness of the dollar last week, following the lower trend in U.S. interest rates. The D-Mark and French franc virtually reversed the positions they have held within the European Monetary System for the last few months. Following the realignment on October 4,



The chart shows the two constraints on the system: the exchange rate and the money supply. The upper grid, based on the money supply, shows the ECU (European Currency Unit) as a basket of European currencies.

involved a revaluation of 5.5 per cent of the D-Mark and Dutch guilder, and a devaluation by 3 per cent of the French franc and Italian lira, the French franc moved to the top of the system and the D-Mark went from the top to the bottom. A cut in German interest rates on Thursday may prevent the D-Mark returning to the top of the EMS quickly, although French rates also fell towards the end of the week.

HALF THE WORLD'S top 150 banks are not making a profit, says a London-based research company. *Page 3*

INTERNATIONAL Harvester in Britain expects to meet its lead bankers, Barclays and Midland, this week to negotiate a new support package. *Page 3*

ELECTRICITY BOARDS should not be allowed to disconnect supplies without going through the courts says a Citizens Advice Bureau report. *Page 4*

BOILERMAKERS and the NCB criticised the Government because only eight grants worth a few thousand pounds have been made under a £50m scheme to aid conversion of factories from oil to coal. *Page 4*

EUROPEAN AND U.S. steel producers' fears of renewed anti-dumping battles will dominate discussions at the International Iron and Steel Institute's annual conference in Toronto this week.

MALAYAN TIN Dredging shareholders approved a merger with Malaysia Mining Corporation, creating the world's largest tin mining company. Shares will be listed from today. *Page 20*

## Oil companies plan series of North Sea gas pipelines

BY RAY DAFTER

NORTH SEA oil companies are planning a series of gas pipelines to replace the Government's abandoned £2.7bn gathering network.

The industry's proposals could result in the installation of about 600 miles of pipelines and should provide a boost for the offshore supplies industry, in particular the British Steel Corporation.

Companies have told the Government and the British Gas Corporation that their systems will ultimately collect at least as much gas—11 trillion (million million) cubic feet, worth £25bn at current prices—as the £200-mile pipeline proposed by the Government. The project was abandoned last month because of financing problems.

Consortia of offshore companies are discussing plans for three systems:

- A northerly network, to be built in the next few years and linked to the Far North Liquefied and Associated Gas System (Flags). The Flags pipeline, being developed by Shell and Esso, is due to come on stream in the next six months linking the Brent discovery and nearby fields to a terminal at St. Fergus, near Peterhead, Scotland.

• A central network, which could be commissioned in the late 1980s. The pipeline would be designed largely to transport ashore gas from the Mobil group's Beryl field. It could be extended to collect gas from fields as far apart as Bruce in the north to Lomond in the south—a distance of about 150 miles.

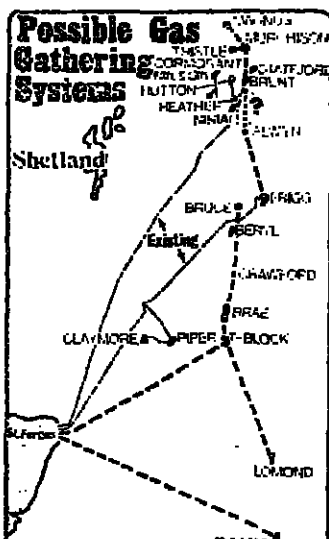
• A southern network, based on Shell/Esso's Fulmar field and the cluster of other oil and gas discoveries in the area. The system is unlikely to be built before the late 1980s or early 1990s, because the reserves of this area—almost 200 miles east of Dundee—have yet to be fully appraised and identified.

A further line is almost certain to be built by two French companies, Total and Elf, between the North Alwyn field and their existing Frigg gas trunkline.

Plans for the northern network are already well advanced. Shell and Esso are close to agreeing terms for carrying gas from British Petroleum's Magnus field, British National Oil Corporation's Thistle field and Conoco's Murchison discovery.

Shell and Esso are also discussing with the UK partners in the big Anglo-Norwegian Statfjord, the biggest field in the big Anglo-Norwegian Statfjord, the biggest field in the big Anglo-Norwegian Statfjord.

Continued on Back Page



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## Thatcher intends to stand firm on economic policy

BY MARGARET VAN HATTEM, LOBBY STAFF

MRS THATCHER and her economic ministers will come under intense pressure at this week's Conservative Party Conference to come up with a convincing justification for their economic strategy and their determination to stick to it in the face of mounting discontent.

There will be no concessions to increasingly outspoken critics, such as the former party leader Mr Edward Heath.

This was underlined yesterday by the Chancellor, Sir Geoffrey Howe. Speaking on the Weekend World television programme, he insisted on the Government's determination to curb public borrowing and threatened higher taxation if further spending cuts proved politically impossible.

Both Sir Geoffrey, who addresses the conference on Wednesday and is due to make a major speech at the Lord Mayor's Mansion House dinner on Thursday, and the Prime

Minister, who will address the conference on Friday, are expected to persist with their tough uncompromising stance.

However, they will be under pressure to come up with a new rationale, with fresh arguments to boost morale and counter increasing pessimism within the party over its prospects at the next election.

For, while the conference is unlikely to produce anything like open revolt, indications are that the leadership faces a week of considerable embarrassment as the swelling chorus of discredited ministers and other disidents expand on their criticisms at fringe meetings.

The tone this attack is likely to take was foreshadowed yesterday by Mr Norman St John Stevas, sacked from the Cabinet last January, who warned that discontent within the party could not be contained unless there was a significant change of direction in economic

policy.

Interviewed on BBC Radio, Mr St John Stevas denounced the latest Cabinet reshuffle as "a great mistake" in that it gave the party a Right-wing image and eliminated any deviation from the views of the leadership.

No-one, apart from a small band, believed that the present economic policies could deliver the goods, he added. Motions up for debate at the conference constituted a cry from the grassroots for an alternative policy.

Mr St John Stevas also sprang to the defence of Mr H.

Mr Heath was in a difficult position, he said, because while his criticisms were often very constructive, they tended to be discounted because of his well-known personal antipathy to Mrs Thatcher.

Editorial comment, Page 12

## BL strike would hit new car

BY ARTHUR SMITH, MIDLANDS CORRESPONDENT

FEARS were mounting last night that the threatened all-out strike by BL's 58,000 car workers could jeopardise a £200m investment crucial to the future of the motor industry.

The BL board has given approval to the LM11, the second car in the company's planned middle-range models, considered vital to the State concern's survival as a volume producer.

The go-ahead has been given to a £200m capital investment which will give a much-needed boost to the struggling motor equipment and components suppliers.

Civil engineering work at Cowley, Oxford, the home of the new car, is about to get under way. Spending on the project will begin towards the

end of this year, rising to a peak in 1982 and 1983.

The aim is to get the LM10, a five-door hatchback replacement for the Allegro and Maxi, into production within 12 months, ready for launch in February 1983. BL's opposition to Ford's Escort, it will be sold in all European markets.

Output of the LM10 is due to reach 2,000 cars a week, which would give an important base for components suppliers anxious to get into export markets.

But within 12 months comes the conventional four-door saloon, which is expected to be turned out at between 2,000 and 2,500 vehicles a week, when various derivatives have been introduced.

Much of the investment in new facilities at Cowley will go into robotics and advanced technology to make the plant more automated than Longbridge, Birmingham, itself heralded as one of the most modern in Europe.

All these plans could be put at risk if workers at mass meetings fixed for Friday at the 20 car plants respond to their union leaders' call for a strike in protest at BL's 3.5 per cent pay offer.

BL has called national union leaders to a meeting in London today in which details are likely to be announced of about 3,000 redundancies, involving planned closure of Coventry Engines, the Speke body-pressing plant near Liverpool, and several small factories.

A warning is likely to be given of the fragility of BL's Continued on Back Page

## Intel in big microprocessor deal

BY LOUISE KEYHOE IN SAN FRANCISCO

INTEL CORPORATION and Advanced Micro Devices, two of the largest U.S. semiconductor manufacturers, have signed an extensive agreement to co-operate in the marketing and development of microprocessors over the next 10 years.

As partners, rather than competitors, AMD and Intel will represent a major new force in the semiconductor industry.

Intel is the world's fourth largest manufacturer of integrated circuit "chips" after Texas Instruments, Motorola and National Semiconductor. Sales last year were \$855m (£445m). AMD ranks ninth in the world, with sales of over \$300m.

In line with the difficulties much of the industry has suffered this year, both companies announced disappointing quar-

terly results last week. Intel's operating earnings showed a decline of 82 per cent for the first nine months of this year to \$25.5m from \$143.4m in the same period in 1980.

AMD reported an 85 per cent drop in net income from \$7m to \$1m and a 16 per cent drop in sales for the quarter ending September 27 to \$65m, from \$77m in 1980.

The Intel-AMD agreement due to be announced today, could mark the beginning of a new trend towards inter-company co-operation in the U.S. semiconductor industry as American firms struggle to fend off increasing competition from Japan.

The companies hope it will strengthen domestic suppliers. Three Japanese companies are already producing copies of the

Intel microprocessor, which is at the centre of this agreement, of them without licence from Intel.

The deal will also provide Intel with a badly needed U.S. second source for its top-range of microprocessors.

AMD will gain access to the substantial market for Intel-designed microprocessors, and will be able to share in development of future product lines.

Its product contributions to the deal will be some special peripheral parts that work alongside microprocessors.

More significantly, AMD will allow Intel access to its bipolar processing technology, a method of manufacturing chips which is increasingly attractive. This could give Intel an opening into new markets for super-fast logic circuits and telecommunications devices.

## Egyptians hold 200 as unrest spreads

BY ANTHONY McDERMOTT IN CAIRO

ABOUT 200 soldiers and civilians have been arrested since the assassination of President Sadat last Tuesday.

This suggests that the assassination plot had deeper roots around the country than the Cairo Government has so far been willing to concede.

The officers arrested are up to the rank of brigadier, according to Egyptian and Western security experts.

Incidents at the weekend have pointed to widespread unrest among Moslem extremists, verging on open insurrection.

At least one officer is reported to have been killed at the Shubra mosque in Cairo when police moved to disperse men who were still gathered there well after the end of evening prayers.

There are said to have been attacks on several police stations in the Cairo area. Meanwhile, Mr Nabyeh Ismail, Minister of the Interior, has denied a report that machine-guns were fired from two cars at his home in a suburb of the capital.

There have been daily reports of bombs in different parts of Cairo. One of the most serious incidents—officially attributed to a grenade exploding accidentally—apparently took place at the barracks in Abbassiyah on Friday night.

The toll from the clashes between well-organised members of the underground Moslem Brotherhood and security forces in Asyut, 250 miles south of Cairo, has now risen from 20 dead to 118 dead and 230 injured. Among the casualties were 45 troops.

Against this background of uncertainty, the U.S. is to step up its military presence in Egypt in the coming weeks to reaffirm its interest in the area, leading members of the Reagan Administration said yesterday. Reginald Dale writes from Washington.

Speaking from Cairo on NBC Television, Mr Alexander Haig, the Secretary of State, said that in the coming months there would be an extension of American and Egyptian forces, joined by some of the Gulf states.

Mr Haig would not confirm reports that the Pentagon is planning to send B52 bombers loaded with live conventional bombs on an on-stop mission from North Dakota to Egypt and back to demonstrate the long reach of American power.

## Treasury gives warning on tax increases

BY DAVID MARSH

THE TREASURY has warned, in advance of the Conservative Party conference, that taxes may have to rise next year unless the Cabinet agrees planned cuts in public spending this autumn.

The message, delivered separately by Sir Geoffrey Howe, the Chancellor of the Exchequer, and Mr Leon Brittan, the Chief Secretary to the Treasury, is that the Government is sticking to its strategy of bringing down interest rates and inflation by reining in public borrowing.

Sir Geoffrey, interviewed yesterday on television's Weekend World said he wanted to cut spending rather than raise taxes.

"I would like to lighten some of the tax burdens on industry and enterprise," he said.

But tax increases were one of the options open in next spring's Budget in order to produce a borrowing requirement that could be financed without putting upward pressure on interest rates.

Mr Brittan, in an interview in the Financial Times, said that although nothing had yet been decided, there was "a very strong case" for tax reductions for industry, such as a cut in the National Insurance surcharge. He warned, however, that public sector borrowing was a "crucial determinant" and said it would be "extremely difficult even to retain the present position so far as tax is concerned" unless planned spending cuts were achieved.

The Treasury Ministers' statements amount to a shot across the bows of spending Ministers in the midst of crucial discussion about next year's pending programme.

Initial bids put in for spending in 1982-83 by government departments amount to around £5bn more than planned by the Treasury. The matter is due

to be discussed in a Cabinet meeting later this month, probably next week.

Sir Geoffrey declared on television that governments around the world now recognised that cuts in spending were a precondition for interest rate reductions.

Keen to display his knowledge of EEC matters after chairing the European Monetary System last weekend, Sir Geoffrey said last week's reduction in West German interest rates was due to Chancellor Helmut Schmidt's achievement in cutting £4bn from his country's borrowing requirement.

Even the Socialist government in France, he pointed out, announced a cut in public spending projects last week.

Public borrowing and spending for this year were roughly on target, after allowing for the effects of the civil servants' dispute. The borrowing cuts made in the March Budget had allowed UK interest rates to remain below the international average this summer before the rise during the last month.

Mr Brittan said he expected 1981-82 public borrowing to run out around the Government's £10.5bn target.

Referring to the tight U.S. monetary policy, he said, "If you have the pressure from outside leading to higher interest rates, then it becomes all the more important not to do anything which domestically leads to further pressures."

He said the low point in the recession had now been reached. "I'm not suggesting some type of rosy boom-time expectation"—nevertheless a "modest" recovery in output was likely next year and the downward movement in inflation would continue in a "perceptible way."

## Chambers of Commerce urge £2bn expenditure

BY JOHN ELLIOTT, INDUSTRIAL EDITOR

LOCAL CHAMBERS of Commerce this morning join the growing band of industrial and political groups which are calling on the Government to help companies climb out of the recession by authorising expenditure on major public sector projects.

The Chamber wants £2bn spent immediately on projects such as rail modernisation and telecommunications. They also

call for a more positive industrial strategy, a special low rate of interest for manufacturing industry, lower energy costs, tougher trade policies, and a "political consensus" on wage restraint.

The proposals are especially significant because they have been published on the eve of Continued on Back Page

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### CONTENTS

Recession: blighted hopes of a revival	12	Justina: The birching conundrum	10
Northern Ireland: FitzGerald's crusade stirs debate	13	Lombard: Peter Riddell on the SDP	13
Leon Brittan: an interview	4	Editorial comment: Mrs Thatcher and UK economic policy	12
Management: patents system under pressure	8	Survey: office equipment	inset
Technology: Fiat's plastic car	17		

Arts	11	Law	24	Weather	24
Appointments	11	Lombard	13	World Econ. Ind.	2
Building Notes	16	Management	8	World Stock Mkts.	15
Businesses' Dry	14	Men. and Matters	12	World Trade	2
Company News	14	Money & Exchange	20	ANNUAL STATEMENTS	
Crossword	11	O'case News	2	2 English Assoc.	14
Entertainment: Gde	11	Racing	18	Old Court Int.	14
Europe: Markets	17	Share Information	22	Minerals	19
Financial Diary	17	Spain	10	INTERIM STATEMENTS	
Insurance	17	Technology	17	Dobsonians	17
Int. Co. News	20	TV and Radio	10		
Labour	7	UK News	5-4	PROSPECTUS	
Letters	18	Unit Trains	21	Bank of England	4

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# Sharp drop in consumer demand for credit

By David Churchill, Consumer Affairs Correspondent

A SHARP fall in the demand for consumer credit during September is revealed today by the United Association for the Protection of Trade, Britain's largest credit reference agency.

The association says credit applications were 10 per cent down compared with the same month last year.

The fall is further evidence of a slump in consumer confidence caused by the continuing recession, rising inflation and interest rates.

Dr Brian Bailey, the association's director-general, points out that while September is traditionally a relatively low-spending month, a 9 per cent drop indicates that consumer confidence is still very depressed.

The only retailers reporting an increase in credit applications during the month were those supplying home heating appliances and central heating systems.

The biggest falls in credit demand were in the Midlands and Scotland. Demand in both areas was some 17 per cent down on the same month last year. Northern Ireland continued to maintain a buoyant demand with applications running some 10 per cent higher than last year.

Meanwhile, the John Lewis department stores group appears to be doing better than many other retailers. It reports that sales in the week ending October 3 were some 12.2 per cent above the corresponding week last year. This is also above its sales target of a 10.7 per cent increase for the half year. However, sales in the past nine weeks are only 8.3 per cent above last year's levels.

# Chemical industry loses up to 750 jobs

BP Chemicals is to shed 250 jobs at its Grangemouth petrochemicals complex in Scotland. The cuts will be made over the next 15 months. It is hoped through natural wastage.

Meanwhile, Imperial Chemical Industries has again warned that it plans to cut the workforce at HHP House works, Thornton, near Blackpool, by about 20 per cent by 1983-84 involving between 450 and 500 jobs, mainly through early retirement, natural wastage and voluntary redundancies.

# Loss of image

NEARLY 70 per cent of the 150 companies taking part in a survey feel industry's public image is worse now than 10 years ago. However, only 18 per cent had a full-time public relations officer. It was felt by 58 per cent that industry's successes were ignored or played down and by 84 per cent that the Press concentrated too much on bad news.

# Scottish rates move

MR GEORGE Younger, the Secretary of State for Scotland, is to seek powers to force Scottish local councils to hold referendums if the Government considers their proposed rate rises excessive.

# Ferranti move

FERRANTI is expected to start selling large electronic private automatic branch exchanges (PABXs) by the end of this year. The equipment is expected to have been developed by General's Telephones and Electronics (GTE) of the U.S.

# Societies' denial

THE Building Societies Association denied over the weekend reports that the smaller members had agreed for a 15 per cent mortgage rate instead of the 15 per cent finally agreed.

# Regional policy blamed for dividing country

By ANTHONY MORETON, REGIONAL AFFAIRS EDITOR

BRITAIN'S regional financial policy over the past 25 years is questioned today by a former senior civil servant who once helped administer it.

In a monograph from the Institute of Economic Affairs, Mr J. H. McEnery says that regional policy has helped to perpetrate the division between the industrial north and the service-based south.

Since the war, the aim had been to reverse the trend of the 1930s by encouraging manufacturing companies to move to the north of England, Ulster, parts of Scotland and parts of Wales.

By the 1970s however, the picture had changed and the growth was in the service sector, mostly in the south.

Official policy reacted too slowly to counteract this, Mr McEnery believes, partly because it thought manufacturing investment was a desirable end in itself, and service industries less important.

Mr McEnery was in a good position to observe what he calls the "sheer diagnostic inertia" because he was for four years—from 1972—regional director for the Department of Industry's Yorkshire and Humberside region.

Mr McEnery's solution is to end regional development grants—22 per cent towards new buildings and new machinery—in the special development areas and 15 per cent in the development areas—"as soon as possible." They are currently running at about £450m a year.

Selective assistance, which can be given in addition to the mandatory grants, should be confined to small companies or to projects that would bring a company's headquarters to the area concerned.

Mr McEnery believes one major post-war problem has been the concentration of company headquarters, and hence decision-making, around London. He says these should be encouraged to move out of London, starting with the nationalised industries. He would also taper out transport subsidies in the south east—probably amounting to about £150m a year—since these tended to cushion workers in offices, that might be better located elsewhere.

When it comes to incoming foreign investment, Mr McEnery would only support that which brought a complete headquarters unit with it—and only if the goods subsequently produced were neither price sensitive nor already manufactured in Britain.

A short-term boost for the regions might be given in cash grants for new office buildings. A policy such as this, he believes, would "start to heal the split between the two nations and make for a more prosperous and stable Britain."

Manufacturing Two Nations. The sociological trap created by the bias of British regional policy against service industry. By J. H. McEnery. Institute of Economic Affairs Monograph 36: £1.50.

# Tinplate workers seek output increase

By HAZEL DUFFY, INDUSTRIAL CORRESPONDENT

THE TINPLATE division of British Steel Corporation has returned to profit but some workers claim this could be higher if the plant loading pattern were changed.

The profit, before interest and tax, in the five months to the end of September was £2.2m, which divisional management admits is less than budgeted for. The management says adjustment to the new work schedules took longer than expected, while demand for tinplate remains depressed.

The three South Wales works at Ebbw Vale, Trostre and Velindre, are producing at an annual rate of 800,000 tonnes against sales forecasts of 850,000 tonnes. Total capacity is 925,000 tonnes. Two years ago it was more than 1m tonnes.

In a letter to Mr Ian MacGregor, BSC chairman, the Velindre workforce claims the plant's potential profit is £10m to £20m a year since the declining levels have been reduced by two-thirds.

The recent letter to all employees from Mr MacGregor stated: "This year we can only work on the basis of 'something for something'." In reply, the workforce argues that something must be put into Velindre.

"We ask for an increase in production to increase profits," it says.

It claims that Ebbw Vale, which has invested £57m in tinplate, is still losing money. Management says the plant "has made a lot of progress."

Velindre also claims it is being supplied with steel coil that is too small and inconsistent in quality, but in spite of the problems, customers still ask for "Velindre made."

The letter goes on: "Incompetent management and meddling politicians must not be allowed to mar our success."

# Boeing praise for British suppliers

By MICHAEL DONNE, AEROSPACE CORRESPONDENT

SEVERAL UK companies have won awards from Boeing Vertol, part of the US Boeing group, as "suppliers of excellence" to the group's civil and military helicopter programmes.

Under a deal between the UK and U.S. governments, whereby the RAF bought 33 Boeing Chinook helicopters worth about \$250m, Boeing was required to give British industry orders worth \$60m over 10 years, primarily through not necessarily on helicopter components and equipment.

So far, Boeing has committed over \$37m worth of business to over 50 companies, and has tendered out for about another \$50m worth.

Of the companies involved, eight have given "outstanding" service to Boeing, delivering quality products on time or ahead of schedule at competitive prices.

The eight are Lucas Aerospace, Metair Aircraft Equipment, Westland Helicopters, British Hovercraft Corporation, PZT Industries, Midwest Numerical Controls (Wales), Twyford Motors (Aircraft and Engineering) and I. A. Rumold.

The products involved range from fuel pods and cells to aircraft seats, especially for the BV-224, commercial variant of the Chinook which is being bought by British Airways Helicopters.

In addition to the direct financial benefits of working with Boeing, these and other companies involved gain through exchange of engineering and technical know-how.

● The total value of orders for wings and other components for the European A-300 and A-310 European Airbus won so far by British Aerospace now exceeds £550m, covering 532 aircraft.

By mid-September, 179 sets of wings for Airbus had been delivered from British Aerospace's Chester factory to Airbus Industrie in Toulouse. With deliveries currently at four wing-sets a month, the total should reach nearly 200 by Christmas. It is planned to increase Airbus output to eight aircraft a month by 1984.

Current Airbus orders and options stand at 471 aircraft, but the group has placed forward contracts for wings with British Aerospace, which explains the figure of 532 aircraft covered by wing-orders to date.

● Air Ecosse, the Aberdeen-based airline, has placed an order worth £8m for five Shorts SD-330 commuter airliners for use on its Scottish air routes.

This brings total orders for Shorts SD-330 30-seat commuter airliners to over 100, of which over 70 have been delivered. Deliveries to Air Ecosse start at the end of this year.

● Jetsave, the transatlantic low-fares operator, is to offer a new cheap UK-Canada return rate of £145 next summer, compared with the cheapest 1981 fare of £188.

# BNOC chief hopes for dearer Saudi oil

By Martin Dickson, Energy Correspondent

Mr Philip Shelbourne, chairman of the state-owned British National Oil Corporation, says he hopes Saudi Arabia will increase the price of its oil from \$32 to \$34 a barrel.

Such a move would almost certainly mean an increase in the price of North Sea crude—of which BNOC is the major trader—from \$35 a barrel to about \$37.

Mr Shelbourne, writing in the latest issue of Coal and Energy Quarterly, published today, says a correct balance in the pricing of oil is critical to ensure there is stability in the North Sea.

The price of oil must not be too low, as this causes wastage of a valuable non-renewable resource.

Although he agrees in principle with the Department of Energy that the peak UK oil production period expected in the mid-1980s should be flattened, "this must not be done at the expense of exploration and development."

The Government has ordered BNOC to postpone by two years the start of production from its Clyde field, which will now come into operation in 1987.

The Government's plan to introduce private equity into BNOC's exploration and production activities should be welcomed as it will free the corporation from day-to-day control by the Treasury.

In his article he also attacks the Government's North Sea taxation policy—and how it is spending oil revenues.

"In order to encourage companies to invest in exploration and development, it is important to have the right balance in taxation of UK continental shelf oil."

# International Harvester to ask bankers for support package

By HAZEL DUFFY, INDUSTRIAL CORRESPONDENT

INTERNATIONAL Harvester in Britain expects to meet its lead bankers, Barclays and Midland, this week to negotiate a new support package.

This follows the renegotiation of the first support package by the lead banks of International Harvester in the U.S., for which agreement is still being sought among the many smaller banks that have loans outstanding to the group.

The bankers of IH Great Britain will be asked to commit themselves to substantial financing of the agricultural equipment group over the next two years. Most of IH's borrowings are in the form of overdrafts which it is hoped will be refinanced as two year loans. About 20 banks are involved, including Barclays and Midland.

The package being requested by IH is similar in many respects to that which has been agreed in the U.S., except that it is not likely to include an interest rate subsidy. Nor can it include a provision for the banks to take stakes in the company's equity, as is being done in the U.S., as all of IH Great Britain's equity is held by the parent company.

IH Great Britain will record a big loss for the current financial year, which ends on October 31. Last year it lost £13m, and the current year's losses will exceed this.

The company plans a return to profit next year. It last made a profit in 1979 of £3.3m.

The closure of IH's head office in City Road, London, at the end of this month will be a major element in the plan to return to profit.

The lease on the offices, which IH has occupied since 1928, is up for sale at £2m for the remainder of the 99-year lease.

A small head office staff has been moved to Lancaster, where IH has a large factory and office space.

International markets for agricultural equipment have been extremely depressed in the past two years, particularly in North America.

IH exports about 85 per cent of its British production, much of it to North America.

In Britain, it ranks third, after Ford and Massey-Ferguson and claims to have increased its share of the tractor market from below 12 per cent to 14 per cent in the past year.

The financial package being sought by IH Great Britain will be split equally between the credit corporation and the manufacturing operation. It is expected that the banks will be looking for greater security than under the first financial package.

# Britain 'in bank profit leaders'

By OUR BANKING CORRESPONDENT

ONLY HALF of the world's top 150 banks are making a profit, if allowance is made for inflation and differing capital structures, according to IBCA Banking Analysis, a London-based research company.

British and U.S. banks show up well in the analysis of comparative banking profitability. French and Italian banks show negative returns. Dutch and Swiss banks generate real returns. Only one bank in Canada fails to make the grade.

In terms of IBCA's analysis of real profitability, the five most profitable banks in the world are: Australia and New Zealand Banking Corporation, Bank of Scotland, Hongkong and Shanghai Banking Corporation, Texas Commerce Bankshares, and Bank of New South Wales.

To measure real profitability, IBCA has taken each bank's return on equity and adjusted for the domestic rates of inflation and differing equity/assets ratios.

Some banks, such as the state-owned French banks, for example, have considerably less equity capital than other banks. This gives them an advantage.

To put all banks on the same footing for comparative purposes, IBCA therefore has assumed that all the banks observe an identical equity/assets ratio of 4 per cent.

IBCA Banking Analysis, 2-12, Wilson Street, London EC2M 3TE, and P.O. Box 428, Lenox Hill Station, New York, NY 10021.

● THE CO-OPERATIVE BANK is boosting the rates of interest offered to personal customers placing large sums with the bank. Depositors placing £8,000 or more for a year will receive a fixed rate of 16.6 per cent. For six months the rate of interest is 16 per cent.

● MIDLAND BANK has appointed Mr Brian Allison, an assistant general manager, to co-ordinate the bank's approach to personal international payments systems, ranging from cash dispensers to traveller's cheques and credit cards.

This is believed to be the first such senior appointment in a UK clearing bank.



# R.P. Martin & Co. Limited

(Registered in England No. 1056209)

SHARE CAPITAL	
Issued and to be issued fully paid	£466,464
Authorised	
£550,000	Ordinary Shares of 5p each

The Merger between R. P. Martin & Co. Limited (the "Company") and Bierbaum & Co. OHG and subsidiary partnerships and affiliated companies was approved by the shareholders of the Company on 14th August, 1981 and is expected to be completed on 14th October, 1981. The enlarged share capital is stated above on the basis that the £1,300,000 nominal of 1 per cent Convertible Unsecured Loan Stock 1999 (the "Convertible Stock") issued to the Partners of Bierbaum & Co. OHG is fully converted.

Application has been made to the Council of The Stock Exchange for the Ordinary Shares of the Company already in issue to be re-admitted to the Official List and, subject to Completion of the Merger and to conversion of the Convertible Stock and allotment of the Ordinary Shares resulting from such conversion, for the Ordinary Shares so allotted to be admitted to the Official List. It is anticipated that dealings in the Ordinary Shares of the Company already in issue will re-commence on Thursday 15th October, 1981.

Particulars of the Company are available in the Extel Statistical Service and copies of such particulars may be obtained during business hours on any weekday (Saturdays and public holidays excepted) up to and including 26th October, 1981 from:-

- MMG Limited, 37 Upper Grosvenor Street, London W1X 9PE
- Singer & Friedlander Limited, 20 Cannon Street, London EC4A 3GF
- Hoare Govett Limited, Heron House, 315/325 High Holborn, London WC1V 7PB
- 27 Throgmorton Street, London EC2N 2AN

12th October 1981

# Which man is telling the truth?

Until this year, anyone could pretend to be an insurance broker. Some were experienced, some were not. Some were not bothered as long as they made a sale.

But from December this year, no-one in the UK will be able to describe himself as an insurance broker unless he is formally registered, and subscribes to a carefully-worded code of conduct.

We can show you the list of some of the brokers in your area. (Or you can write to the Insurance Brokers Registration Council.)

# WHY WE WELCOME THE CHANGE

As brokers know, we specialise in personal assurance: your pension plan; tax-efficient, flexible savings plans; protection for your family. (And because we've been specialising for over 140 years, we're among the best in the country at what we do.)

We welcome the change because, not only do we value people more highly than things,

we want you to be in the safe hands of registered brokers or qualified professionals.

If you have problems replacing your valuables after a break-in, that's unfortunate. But if you have problems in drawing your pension, or if your family has problems in collecting your life assurance should anything happen to you, that could be tragic.

If in doubt, write to us. We have the list. The Scottish Provident Institution, Head Office, PO Box 58, 6 St. Andrew Square, Edinburgh EH2 2YA.



Member of the Association of Scottish Life Offices.

We value people more highly than things.



## UK NEWS

## Brittan takes up the stick of tax increases

David Marsh talks to Leon Brittan (below) about the realities of government economic policy.



I would not favour that. Restrained spending would make room for possible tax reductions he says. He claims that the 1979 reduction in the upper rate of income tax has led to a "sea-change in managerial expectations."

Asked if the Government is giving priority to cutting the national insurance surcharge, as industry hopes, he says: "I think there is a very strong case for concentrating any [tax] change that one can make on helping industry to emerge from the recession."

increases. "The concept of a government which is steadily and resolutely sticking to a policy designed to reduce the rate of inflation does have an effect on people."

"Doubts do creep in occasionally. Anybody faced with problems of the complexity of the British economy would be self-centred... essential to the point of insanity - if he didn't ask himself: not once a week but once a day, whether this is right or not."

"Of course one does, and of course one recognises the possibility that others may be right and I may be wrong."

But he affirms that "the sort of conviction to the system... an attempt to start on a realistic basis that we have embarked upon - is something that I passionately believe in."

"And the reason why I think I am here is not so much because of my skills of mediation or persuading colleagues, but because I do hold that view."

"People in the country and it is intensely painful to go through the period of adjustment. What we've got to do is both to explain it in a coherent and persuasive way and to take measures to reduce the pain - palliative measures in the best sense."

"There's a ray of hope that we will gradually emerge from the recession, first with output increasing, then with unemployment coming down, and with productivity up and inflation down, with a new sense of realism in industrial relations, and with a readiness to pay ourselves what we earn and when we have earned it."

"Now if that can be achieved - and I don't believe that the time-scale of the Government makes it impossible to achieve that - we really will have brought down a revolution in British economic prospects, and I think it's worth going through a half of a lot of political risk to get there."

IF Mrs Margaret Thatcher were captain of a cricket team, faced with fading evening light, the prospect of an innings defeat and a cluster of quick catchers, Tory dissidents crowded eagerly round the wicket, the person she would most likely call on as night-watchman to stonewall doggedly until close of play would be Mr Leon Brittan, Chief Secretary to the Treasury.

Mr Brittan, promoted from the Home Office nine months ago to look after the public spending programme, is a Minister in the Trevor Bailey mould.

His straight-batted defence of the Government's economic policy has earned him the reputation of being one of Mrs Thatcher's most unwavering supporters, and turned him in to something of a target for the trade unions.

He has the distinction of being given a place in history by Mr Clive Jenkins, who has labelled him an "archaeological" economist who wants to take Britain not back to gold, but on to the lead standard.

Mr Brittan's preoccupation at the moment is the autumn round of talks with Cabinet colleagues aimed at bringing next year's public spending in line with the Government's target.

The process involves lopping about £500 of the starting bids put in by spending Ministers before a crucial Cabinet meeting to discuss 1982-83 expenditure later this month.

He has no formal economic training. But one of his previous responsibilities, as Minister of State at the Home Office, in charge of civil defences, was to provide guidance for building fall-out shelters.

This is not a bad grounding for a Treasury Minister presiding over a recession which Mr Powell compared last week with an economic equivalent of the Black Death.

In an interview at his office in the Treasury last week Mr Brittan spoke plainly about the

problem that the Government faced, but rejected the notion that policies had been blown off-course.

He made plain the sincerity of his belief that there was no way forward other than soldiering on with the Government's policies. He spoke, too, of his concern about the painful consequences of rising unemployment.

Like all his Treasury colleagues he was guarded about forecasting almost anything. But he said that the downward movement in inflation, which has levelled off for the moment, would continue "in a perceptible way" that output would rise at a "modest" pace next year, and that unemployment would be falling by the next election.

He admits that the recent sharp rise in interest rates, caused partly but not solely by tight money in the U.S., has been a setback.

"Of course these outside factors make things more difficult, of course they tend to delay recovery, of course they're bad rather than good."

But pinning his colours firmly to the mast of fiscal stringency raised aloft in the March Budget, he says that this makes it all the more important to keep down public-sector borrowing at home.

Reducing the government demand for credit will lead to interest rates lower than they would otherwise be, and therefore makes it possible for the increase in the private wealth-created sector of the economy to be greater than it would otherwise be.

He agrees that the balance of public spending should be adjusted more toward things that are desirable, such as investment rather than pay. But the lid should be kept on tightly.

"The total level of spending going up deliberately as a result of conscious Government policy decision to spend extra-

ly would not favour that. Restrained spending would make room for possible tax reductions he says. He claims that the 1979 reduction in the upper rate of income tax has led to a "sea-change in managerial expectations."

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## Little action on oil-coal factory conversion plan

BY MAURICE SAMUELSON

ONLY EIGHT grants worth a few thousand pounds each, have so far been made under a £50m Government scheme to assist conversion of factories from oil to coal.

The boiler making industry is dismayed by the lack of progress as the two-year scheme, launched in May, was halted by makers of shell boilers as a lifeline to put them out of a deep recession.

The National Coal Board, with a list of 1,000 companies interested in switching to coal, thought it would help to open up a market for an additional 2m tonnes of steam-raising coal.

Although the Industry Department thinks it too soon to judge the scheme's success, boiler-makers and coal industry circles blame the sluggish response on the "inertia" of the Government in handling applications, as well as on the general economic climate.

Industry's lack of interest is reflected by the fact that although the Industry Department distributed about 1,000 application forms, so far only 38 concrete requests have been made. Eight grants have been taken up, nine offered by the Government, five applications rejected and 16 not yet processed.

The scheme, modelled on a French Government measure,

allows the Government to pay up to 25 per cent of the cost of a conversion.

Boiler-makers and NCB officials say that some companies were deterred by the complexity of the application forms and Government insistence on local planning permission (as where chimneys need to be built) before grant application.

The department says that the forms are merely "par for the course" and no more difficult to complete than for similar grant schemes.

But it has accepted the criticism about planning permission, and grants are now being offered pending local authority go-ahead.

The scheme has been bitterly criticised as applying only to conversions from oil, not gas. The Energy Department agrees that this is an "illogical" distinction, but the Industry Department is not expected to drop it on review at the New Year.

The Coal Board and industry are now hoping that the rest of the 38 applications will include some sizeable schemes. Two applications are understood to involve a combined consumption of about 200,000 tonnes of coal a year.

## Call for stress on 'cutting industry's costs'

By James McDonald

A GOVERNMENT committed to industrial recovery should make it a priority to do more to help industry cut its cost base, Sir Antony Part, chairman of the Orion Insurance Company, said in London.

It should make up for industry's shortage of funds for capital investment, which was central to increased productivity, by making leasing more attractive, he told the annual meeting of the Regular Forces Employment Association.

Sir Antony, a former Permanent Secretary of the Department of Trade and Industry, said government should also increase selective aid to research and development, especially in advanced technology, and reduce the national insurance surcharge.

Government public purchasing should be better co-ordinated with its industrial policy. In particular, there should be closer liaison between the Ministry of Defence and the Departments of Trade and Industry.

Admiral Sir Desmond Dreyer, president of the association, said the majority of men leaving the services "were still finding employment of some sort, even though in many instances the jobs would not have been first choice jobs."

## Curbs urged on electricity cut-offs

BY LISA WOOD

RENEWED DEMANDS that the right to disconnect an electricity supply be removed from the supplier are made in a report published today.

The report, by the Greater London Citizens Advice Bureau Service, is the product of two surveys of people who visited its bureaux because of difficulties in paying electricity bills.

London Electricity Board's record in handling its poorest customers is severely criticised. Mr Sean Baine, director of the Greater London Citizens Advice Bureau Service, which co-ordinates 100 bureaux, said: "As long as the LEB is allowed to disconnect without going

through the courts consumers have little protection from harsh treatment by the board."

His report recommends that the Government should introduce a fuel subsidy scheme to protect the poorer consumer from fuel price increases or provide additional income support for low-income households.

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## BUSINESSMAN'S DIARY

## UK TRADE FAIRS AND EXHIBITIONS

Date	Title	Venue
Oct 13-16	6th International Airport Construction and Equipment Exhibition (0272 6212)	Belle Vue, Manchester
Oct 13-16	Distribution Services Show (01-908 2122)	Wembley Conference Centre, Newcastle
Oct 14-15	Hardware Review Exhibition (01-484 4052)	Metropole Ex. Hall, Brighton
Oct 14-16	Internecon Conference and Exhibition (0453 38085)	NEC, Birmingham
Oct 20-29	International Business Show (01-405 6233)	Olympia
Oct 20-23	London Fashion Exhibition (01-388 1200)	Exhibition Centre, London
Oct 21	Motorfair (01-385 1200)	Exhibition Centre, London
Oct 24-26	International Automotive Trade Show - AUTOPARTAC (0494 41545)	Exhibition Centre, London
Oct 27-29	Computer Graphics Exhibition (08274 28211)	Exhibition Centre, London
Oct 27-29	Electronic Test and Measuring Instrumentation Exhibition - TESTEX (0822 4671)	Exhibition Centre, London
Oct 28-Nov 8	Model Engineering and Hobbies Exhibition (0455 637173)	Wembley Conference Centre
Nov 3-6	Health & Safety at Work Exhibition (01-685 7785)	Bingley Hall, Birmingham
Nov 5-10	Kinestration Sports Fair (0458 22663)	Wembley Conference Centre, Town Hall
Nov 8-12	International Domestic and Contract Textiles Exhibition - DACTEX (01-572 2121)	NEC, Birmingham

## OVERSEAS TRADE FAIRS AND EXHIBITIONS

Current	International Market for Videocommunications - VIDCOM (01-499 230)	Cambridge
Oct 12-17	International Maritime Exhibition - RIOMAR (0206 45121)	Rio de Janeiro
Oct 15-25	International Flower and Horticultural Show (01-540 1101)	Copenhagen
Oct 17-21	International Exhibition of Women's Ready-Made Clothing (01-439 3964)	Paris
Oct 19-23	International Water Exhibition and Conference (01-272 4287)	Bombay
Oct 20-23	International Security, Safety and Protection - MANKIND AND PROPERTY - EUROPROTECTION/EUROSECURITY (01-486 1951)	Paris
Oct 21-27	International Petroleum and Gas Exhibition (01-235 2423)	Moscow
Oct 27-31	Electrical Engineering Exhibition (01-540 1101)	Berlin
Oct 28-31	International Sports, Fair (0458 22663)	Cologne
Oct 30-Nov 10	Tokyo Motor Show	Tokyo
Oct 30-Nov 11	International and Gastronomic Fair (0271 812968)	Dijon
Nov 3-7	International Engineering Exhibition (01-681 7685)	Seoul
Nov 4-5	Resins and Pigments Exhibition (0737 68611)	Milan

## BUSINESS AND MANAGEMENT CONFERENCES

Oct 12-13	AMR International: Effective presentations (01-282 2732)	Westbury, WI
Oct 12-16	Lloyd's World of Shipping Conference (01-353 1000)	SE Kang
Oct 13	IPS: Costs and prices—the outlook for 1982-83 (0990 23711)	Penta Hotel, SW
Oct 14	Oyez-IBC: Drafting commercial contracts—provisions of standard forms and essential provisions (01-242 2481)	Scientific Society, WI
Oct 14-15	Frost and Sullivan: Motivating Computer Personnel (01-439 8377)	Gumberland Hotel, WI
Oct 15	CEI: Motivating employees (01-378 7400)	Centre Point, WC1
Oct 15-17	World Sugar Journal: International Policy and Legislation on Sweeteners and Alcohol (0753 72137)	Florida
Oct 16	Systematics International/ICFC: Seminar for Business Executives (0223 63128)	Colchester
Oct 19	British Institute of Management: The Effective Manager (01-405 3456)	Gwent
Oct 20-22	Welsh Development Agency: "Hi-Tec" in a Guest (044385 2666)	Newport
Oct 21	Gower: Insolvency 1981 (01-240 5931)	Park Lane Hotel, WI
Oct 21-22	Energy Business Centre: Energy Projects Information Conference (01-439 8377)	Connaught Rooms, WC2
Oct 21-23	PPA: Team-Talks '81—for those in peripheral publishing (01-937 8000)	Royal Garden Hotel, WS
Oct 24-25	Thames Polytechnic: Starting Your Own Business? (01-504 2630)	Polytechnic, SE15
Oct 27	LCCE: Focus on mainland Spain and the Canary Islands (01-248 4444)	69 Cannon Street, EC4
Oct 28	Dun and Bradstreet: More Effective Trade Credit Management (01-247 4877)	Albany Hotel, Birmingham
Oct 29-29	Crozier: Employment Law Update (01-942 8960)	Kingsington Close Hotel, WS
Oct 29-30	Institute of Purchasing and Supply: national conference (0990 23711)	Harrogate
Oct 30-30	AMR: Management Buy-Outs (01-282 2732)	Royal Garden Hotel, WS
Oct 30	Local Radio Association discussion meeting (01-685 7223)	Connaught Rooms, WC2
Nov 4-6	American Tax Institute: International aspects of U.S.-European Taxation (Paris) (01-248 3701)	Cannon Hotel, EC4
Nov 12	IPS: Computer Purchasing (0980 23711)	Tower Hotel, E1
Nov 13	Bath Chamber of Commerce: The New Industrial Challenge (0225 60655)	Beaufort Hotel, Bath
Nov 18-20	First World Congress on Management Development (0234 45535)	

Anyone wishing to attend any of the above events is advised to telephone the organisers to ensure that there has been no change in the details published.

TENDERS MUST BE LODGED AT THE BANK OF ENGLAND, NEW ISSUES, WAITING STREET, LONDON, EC4M 8AA NOT LATER THAN 10.00 a.m. ON WEDNESDAY, 14th OCTOBER, 1981. OR AT ANY OF THE BRANCHES OF THE BANK OF ENGLAND OR AT THE GLASGOW AGENCY OF THE BANK OF ENGLAND NOT LATER THAN 3.30 p.m. ON TUESDAY, 13th OCTOBER 1981. ENVELOPES CONTAINING TENDERS SHOULD BE MARKED "EXCHEQUER TENDER".

ISSUE BY TENDER OF £1,000,000,000

## 15 per cent EXCHEQUER STOCK, 1997

MINIMUM TENDER PRICE £95.50 PER CENT

PAYABLE AS FOLLOWS:

Deposit with tender 25.00 per cent  
On Friday, 13th November 1981 Balance of purchase money

INTEREST PAYABLE HALF-YEARLY ON

27th APRIL AND 27th OCTOBER

This Stock is an investment falling within Part II of the first Schedule to the Trustee Investments Act 1961. Application has been made to the Council of The Stock Exchange for the Stock to be admitted to the Official List.

THE GOVERNOR AND COMPANY OF THE BANK OF ENGLAND are authorised to receive tenders for the above Stock.

The principal of and interest on the Stock will be a charge on the National Loans Fund, with recourse to the Consolidated Fund of the United Kingdom.

The Stock will be repaid at par on 27th October 1997.

The Stock will be registered at the Bank of England or at the Bank of Ireland, Belfast, and will be transferable, in multiples of one new penny, by instrument in writing in accordance with the Stock Transfer Act 1963. Transfers will be free of stamp duty.

Interest will be payable half-yearly on 27th April and 27th October. Income tax will be deducted from payments of more than 25 per cent. Interest warrants will be transmitted by post. The first payment will be made on 27th April 1982 at the rate of £7.1038 per £100 of the Stock.

Tenders must be lodged at the Bank of England, New Issues, Waiting Street, London, EC4M 8AA not later than 10.00 a.m. ON WEDNESDAY, 14th OCTOBER 1981, or at any of the Branches of the Bank of England or at the Glasgow Agency of the Bank of England not later than 3.30 p.m. ON TUESDAY, 13th OCTOBER 1981. Each tender must be for one amount and at one price. The minimum price, below which tenders will not be accepted, is £95.50 per cent. Tenders must be made at the minimum price or at higher prices which are multiples of 25p. Tenders lodged without a price being stated will be deemed to have been made at the minimum price.

A separate cheque representing a deposit at the rate of £25.00 for every £100 of the nominal amount of Stock tendered for must accompany each tender; cheques must be drawn on a bank in, and be payable in, the United Kingdom; the cheques must be for the full amount of the tender and must be marked "Exchequer Tender".

Tenders must be for a minimum of £100 Stock and for multiples of Stock as follows:-

Amount of Stock tendered for	Multiple
£100 - £1,000	£100
£1,000 - £10,000	£500
£10,000 - £50,000	£1,000
£50,000 or greater	£5,000

Her Majesty's Treasury reserve the right to reject any tender or to allot a less amount than that tendered for. If undersubscribed, the Stock will be allotted at the minimum price, the balance of Stock not tendered for being allocated at the minimum price to the Governor and Company of the Bank of England, Issue Department. If oversubscribed, all allotments will be made at the lowest price at which any tender is accepted (the allotment price), and tenders which are accepted at a price above the allotment price will be allocated in full.

Letters of allotment in respect of Stock allotted, being the only form in which the Stock may be transferred prior to registration, will be despatched by post at the risk of the tenderer, but the despatch of any letter of allotment, and any refund of the balance of the amount paid as deposit, may at the discretion of the Bank of England be withheld until the tenderer's cheque has been paid. In the event of such withholding, the tenderer will be notified by letter by the Bank of England of the acceptance of his tender and of the amount of Stock allocated to him, subject in each case to payment of his cheque, but such notification will confer no right on the tenderer to transfer the Stock so allocated.

No allotment will be made for a less amount than £100 Stock. In the event of partial allotment, the balance of the amount paid as deposit will, when returned, be remitted by cheque despatched by post at the risk of the tenderer; if no allotment is made the amount paid as deposit will be returned likewise. Payment in full may be made at any time after allotment but no discount will be allowed on such payment. Interest may be charged on a day-to-day basis on any overdue amount which may be accepted at a rate equal to the London Inter-Bank Offered Rate for seven day deposits in sterling ("LIBOR") plus 1 per cent per annum. Such rate will be determined by the Bank of England by reference to market quotations, on the due date for the relevant payment, for LIBOR obtained from such source or sources as the Bank of England shall consider appropriate. Default in due payment of any amount in respect of the Stock will render the allotment of such Stock liable to cancellation and any amount previously paid liable to forfeiture.

Letters of allotment may be split into denominations of multiples of £100 on written request received by the Bank of England, New Issues, Waiting Street, London, EC4M 8AA, or by any of the Branches of the Bank of England, on any date not later than 11th November 1981. Such requests must be signed and must be accompanied by the letters of allotment.

Letters of allotment must be surrendered for registration, accompanied by a completed registration form, when the balance of the purchase money is paid, unless payment in full has been made before the due date, in which case they must be surrendered for registration not later than 13th November 1981.

Tender forms and copies of this prospectus may be obtained at the Bank of England, New Issues, Waiting Street, London, EC4M 8AA, or at any of the Branches of the Bank of England, or at the Glasgow Agency of the Bank of England; at the Glasgow Agency of the Bank of England, 1st Floor, 25 Colander Street, Belfast, BT1 5BN; at Mullens & Co., 15 Moorgate, London, EC2R 6AN; or at any office of The Stock Exchange in the United Kingdom.

BANK OF ENGLAND  
LONDON  
9th October 1981

## THIS FORM MAY BE USED

## TENDER FORM

This form must be lodged at the Bank of England, New Issues, Waiting Street, London, EC4M 8AA not later than 10.00 a.m. ON WEDNESDAY, 14th OCTOBER 1981, or at any of the Branches of the Bank of England or at the Glasgow Agency of the Bank of England not later than 3.30 p.m. ON TUESDAY, 13th OCTOBER 1981. Envelopes containing tenders should be marked "Exchequer Tender".

ISSUE BY TENDER OF £1,000,000,000

## 15 per cent EXCHEQUER STOCK, 1997

MINIMUM TENDER PRICE £95.50 PER CENT

TO THE GOVERNOR AND COMPANY OF THE BANK OF ENGLAND  
I/We tender in accordance with the terms of the prospectus dated 9th October 1981 as follows:-

Amount of above-mentioned Stock tendered for, being a minimum of £100 and in a multiple as follows:-

Amount of Stock tendered for	Multiple
£100 - £1,000	£100
£1,000 - £10,000	£500
£10,000 - £50,000	£1,000
£50,000 or greater	£5,000

Amount of deposit enclosed, being £25.00 for every £100 of the nominal amount of Stock tendered for (shown in Box 1 above):-

£	
---	--

The price tendered per £100 Stock, being a multiple of 25p and not less than the minimum tender price of £95.50:-

£	:	p
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I/We hereby engage to pay the balance of the purchase money when it becomes due on any allotment that may be made in respect of this tender, as provided by the said prospectus.

I/We request that any letter of allotment in respect of Stock allotted to me/us be sent by post at my/our risk to me/us at the address shown below.

SIGNATURE  
of, or on behalf of, tenderer

PLEASE USE BLOCK LETTERS

MR/MRS MISS FORENAME(S) IN FULL SURNAME

FULL POSTAL ADDRESS:-

FT POST-TOWN COUNTY POSTCODE

A separate cheque must accompany each tender. Cheques should be made payable to "Bank of England" and crossed "Exchequer Stock". Cheques must be drawn on a bank in, and be payable in, the United Kingdom; the cheques must be for the full amount of the tender and must be marked "Exchequer Tender".

The price tendered must be a multiple of 25p and not less than the minimum tender price. If no price is stated, this tender will be deemed to have been made at the minimum tender price. Each tender must be for one amount and at one price.

## INSURANCE

## Lloyd's tightens security

BY JOHN MOORE

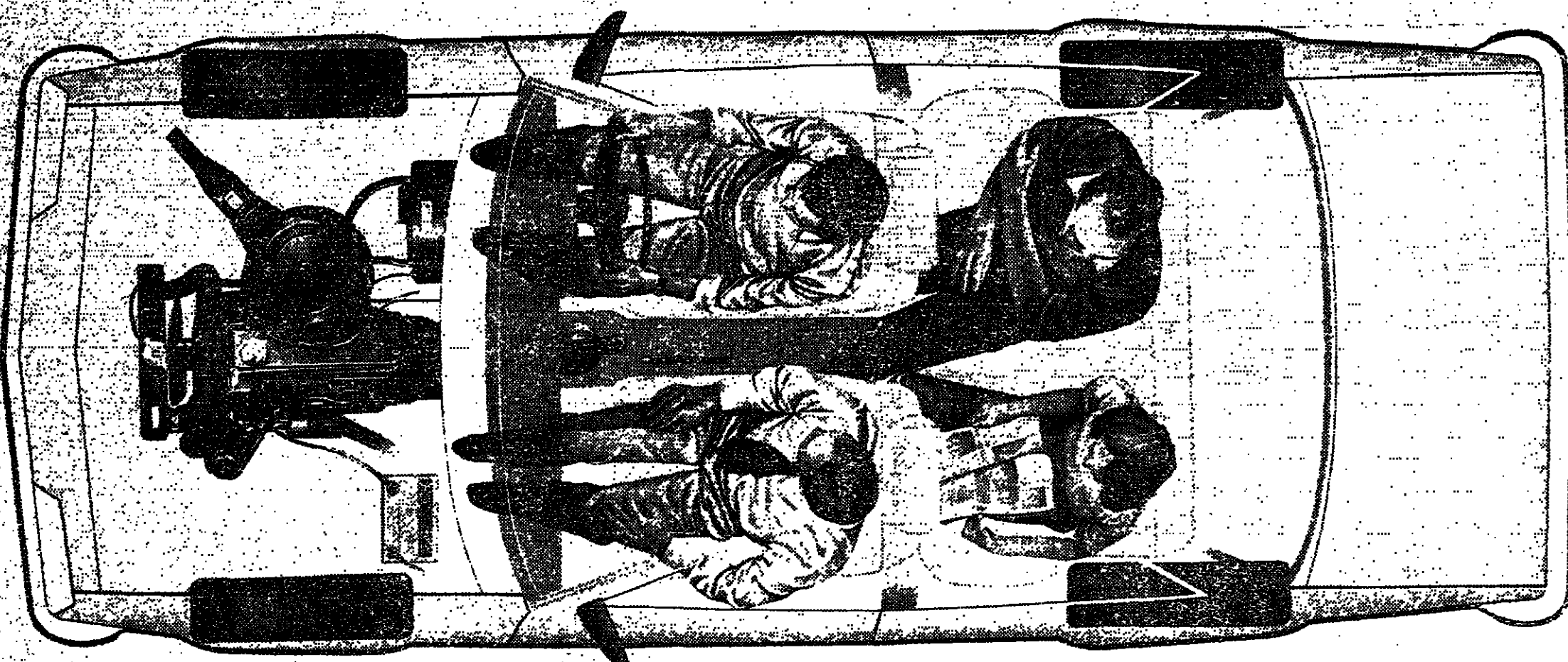
LLOYD'S OF London has been attempting to improve the security supporting its insurance operations over the last year.

The new drives to tighten security followed the publication of last year's Fisher report into Lloyd's self-regulation, which pointed out certain weaknesses in the market's security systems.

Lloyd's has responded to the report's findings in a number of ways. Finding authorities, devices by which insurance specialists not connected

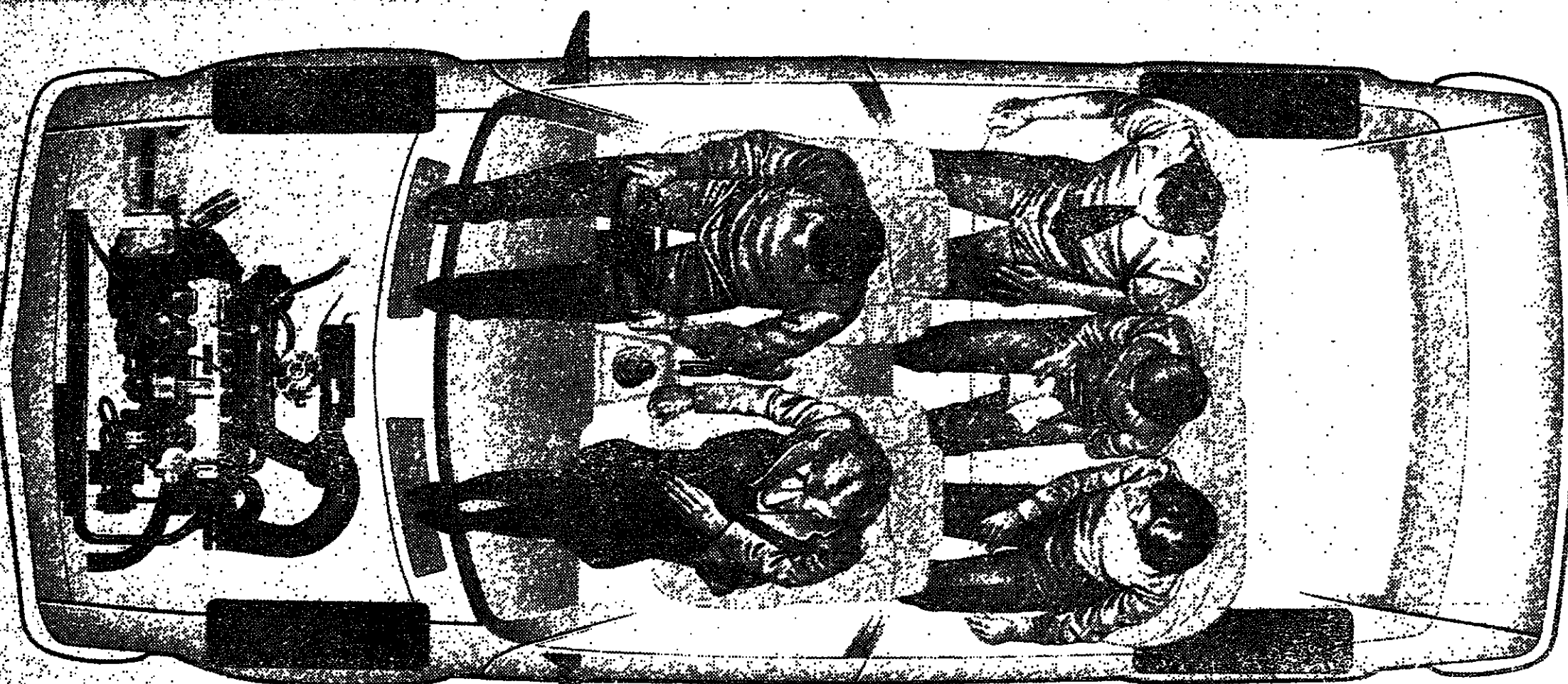


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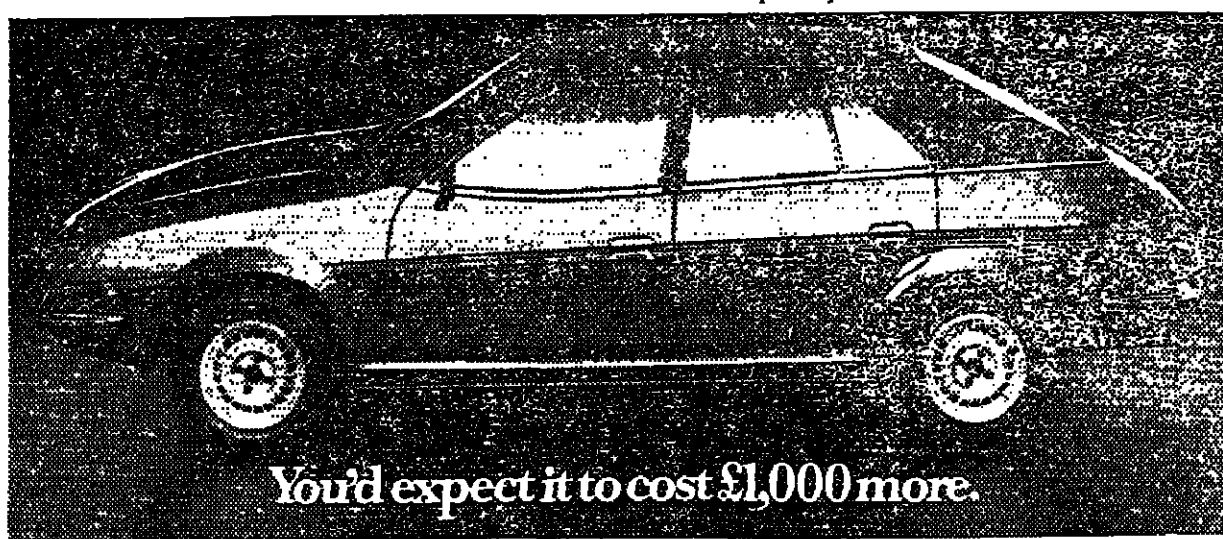
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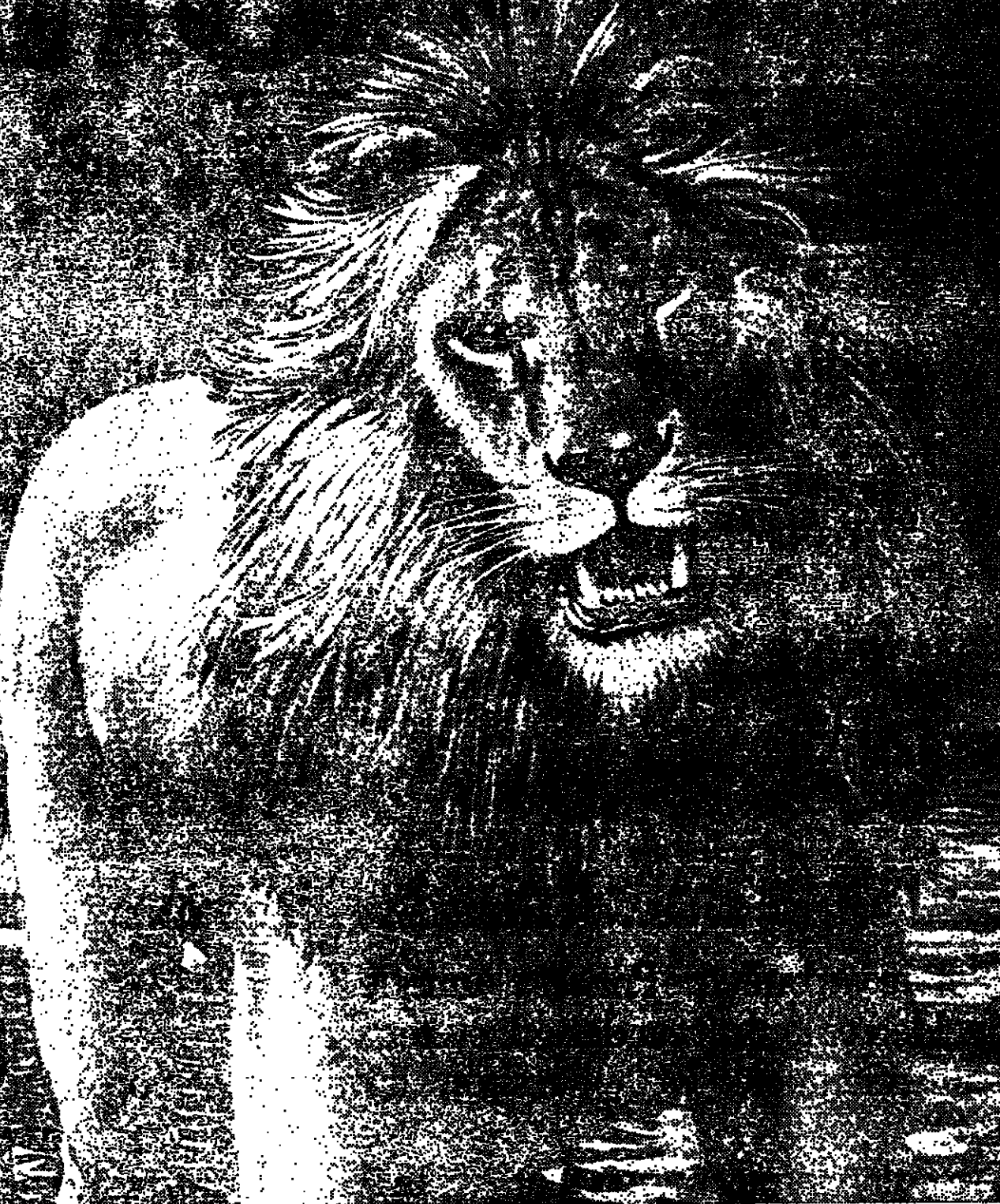
Mr Graham Tardif has been appointed president of CAMBRIDGE REINSURANCE Bermuda subsidiary of National Sea Products of Halifax, Nova Scotia.

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Mr Robert B. Huff has been elected president and chief operating officer of BELL AND HOWELL, Chicago, Illinois.

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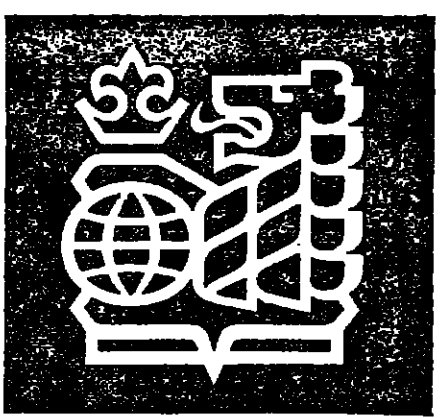
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## Council manual workers threaten pay revolt

BY PHILIP BASNETT, LABOUR STAFF

COUNCIL manual workers in London and the South-East are warning of plans to stage industrial action over pay this winter, whether or not their union negotiators at national level recommend it.

National union negotiators will present the manual workers' claim in Leicester tomorrow, but shop stewards in London and the South-East have called a conference to start organising a campaign to pay more before the employers' side is expected to reply, probably early next month.

The conference, on October 23, is being organised mainly by the National Union of Public Employees and the Transport and General Workers' Union in the area.

A statement from the organisers, NUPES' Camden General Branch, says: "In the past two years no campaign has been organised, and consequently we have been forced to submit to Government pay policies which have savagely reduced the living standards of our members."

Mr Alan Walter, NUPES convenor in Camden's works department and one of the conference organisers, said yesterday: "We are considering industrial action in the London region, regardless of what is happening nationally. By doing so, we hope to set an example to the nego-

tiators and to the rest of the country."

He acknowledged, however, the impact of further job losses on members' readiness to support any such campaign.

The fact that 65,000 jobs have been lost in the past year will be emphasised when the manual workers formally present tomorrow their claim for increases linked to the prevailing rate of price inflation, reduction in hours and improvements in holidays.

The local councils will not reply much, beyond stressing their difficult financial circumstances. But they are likely to give figures to the unions showing the outturn on the payroll of last year's settlement.

While this was nominally 7½ per cent, the figures will show the outturn to have been about 2 per cent. Male manual earnings have risen by less than 6 per cent and female manual earnings by slightly more than 6 per cent, because of the effect of a flat-rate increase and overtime—mainly worked by men—has fallen.

The low outturn is expected to be used by the unions as indicating that the councils can go beyond the Government's cash limit pay provision of 4 per cent.

Some Labour-controlled authorities are expected to support them in this.

Labour control of the firemen's negotiating body is also

expected to mean that the firemen's offer will go considerably beyond the 4 per cent limit.

The employers have agreed to honour the firemen's pay agreement, which links their rises to the upper quartile of manual workers' earnings, as shown by the Department of Employment's New Earnings Survey.

This is normally published late in October but may be delayed this year because of the effect of the five-month Civil Service pay dispute.

Following the divisions in that dispute between Cabinet hard-liners—mainly the Prime Minister and Treasury Ministers—and "doves" such as Lord Soames, who has since been replaced at the Civil Service Department, there are differences in Whitehall about medium-term tactics over Civil Service pay again.

Treasury Ministers and Downing Street are believed to be urging that this year's deal—due for settlement in April—should reflect the views in the Government's forthcoming evidence to the Megaw inquiry into Civil Service pay.

Mr Barney Hayhoe, Civil Service Minister, is to make a Parliamentary statement shortly after the recess, making it clear that under the provisions which settled the strikes, Civil Service pay is not bound by the 4 per cent figure.

## Basnett warns of tough line by Labour

By Our Labour Staff

A SENIOR TUC leader warned yesterday that the next Labour government would have to introduce "draconian measures." These might prove unpopular to trade unionists but would be necessary because of the present Government's policies.

Mr David Basnett, chairman of the TUC economic committee, said the unions would have to agree "a clear policy of crisis measures" from Day One of a Labour government.

"Some of the measures will have to be draconian. They may well have to deny immediate satisfaction on both the collective and personal fronts, but we need this survival kit—and we need to make it work."

The speech was seen by some trade unionists as a pointer towards TUC agreement on an incomes policy.

Mr Basnett, general secretary of the General and Municipal Workers' Union, later denied that this was necessarily so. He said the Government was seeking a confrontation and, accordingly, a confrontation would come.

## TUC members 'shun ballot funds scheme'

BY CHRISTIAN TYLER, LABOUR EDITOR

THE GOVERNMENT'S provision of state funds for trade union postal ballots has failed to meet the standards set for it, according to an independent research organisation.

In the first year of its operation the scheme has attracted only 14 applications. None of the TUC's 110 affiliated trade unions has been among them.

Of the 14 applications, only four were successful, and in only one case did the organisation applying for money receive all it claimed.

The figures have been compiled by IDS Brief, which monitors labour law for Incomes Data Services.

The study says that the scheme has failed on important counts. It has been boycotted by the big trade unions, and has been of little help to the small staff associations which have tried to use it.

State aid for postal ballots was introduced in October 1980, as part of the Employment Act. The Government hoped to encourage the spread of secret balloting to secure a more representative—that is, more moderate—trade union leadership.

The ballots were supposed to apply to the starting and stopping of strikes as well as to the election of trade union officers.

However, only two applications waiting for the certification officer who administers the scheme have been for industrial action purposes.

One is lodged by the British Association of Occupational Therapists. The other is from the Clearing Bank Union, making a retrospective claim for the cost of a ballot during the last bank staffs' wage dispute.

IDS reports that eight of the applications failed because of the strictness of the criteria.

One organisation complained that it had refused money on a technicality. In another case an application was rejected because the union allowed members to hand-deliver their sealed papers as well as using the Post Office.

The scheme is criticised for not reimbursing unions for the cost of employing outside agencies to do the administrative work.

The Government's claim that the scheme does not interfere with the internal affairs of trade unions is challenged.

IDS says small staff associations operating on a limited budget which would like to take advantage of the scheme cannot do so without changing their balloting rules. This constituted "interference by inducement."

Two amendments are proposed, one to allow hand delivery of ballot returns, another to allow small unions to reclaim the costs of outside agencies or temporary administrative help.

The Government is considering a much more radical option.

The Green Paper on trade union immunities being studied by Mr Norman Tebbit, the Employment Secretary, asks whether legal immunity for strike action should be removed in all cases where a secret ballot has not first been held among the workers involved.

If Mr Tebbit decides to pursue this suggestion, it could appear alongside other labour law reforms in the next couple of months.

## Left back McCreadie

LEFT-WINGERS in the Civil and Public Services Association, Britain's largest civil service union, have approved Mr John McCreadie—a CPSA assistant secretary and a supporter of Labour's Militant tendency—as their candidate in the union's general secretary elections.

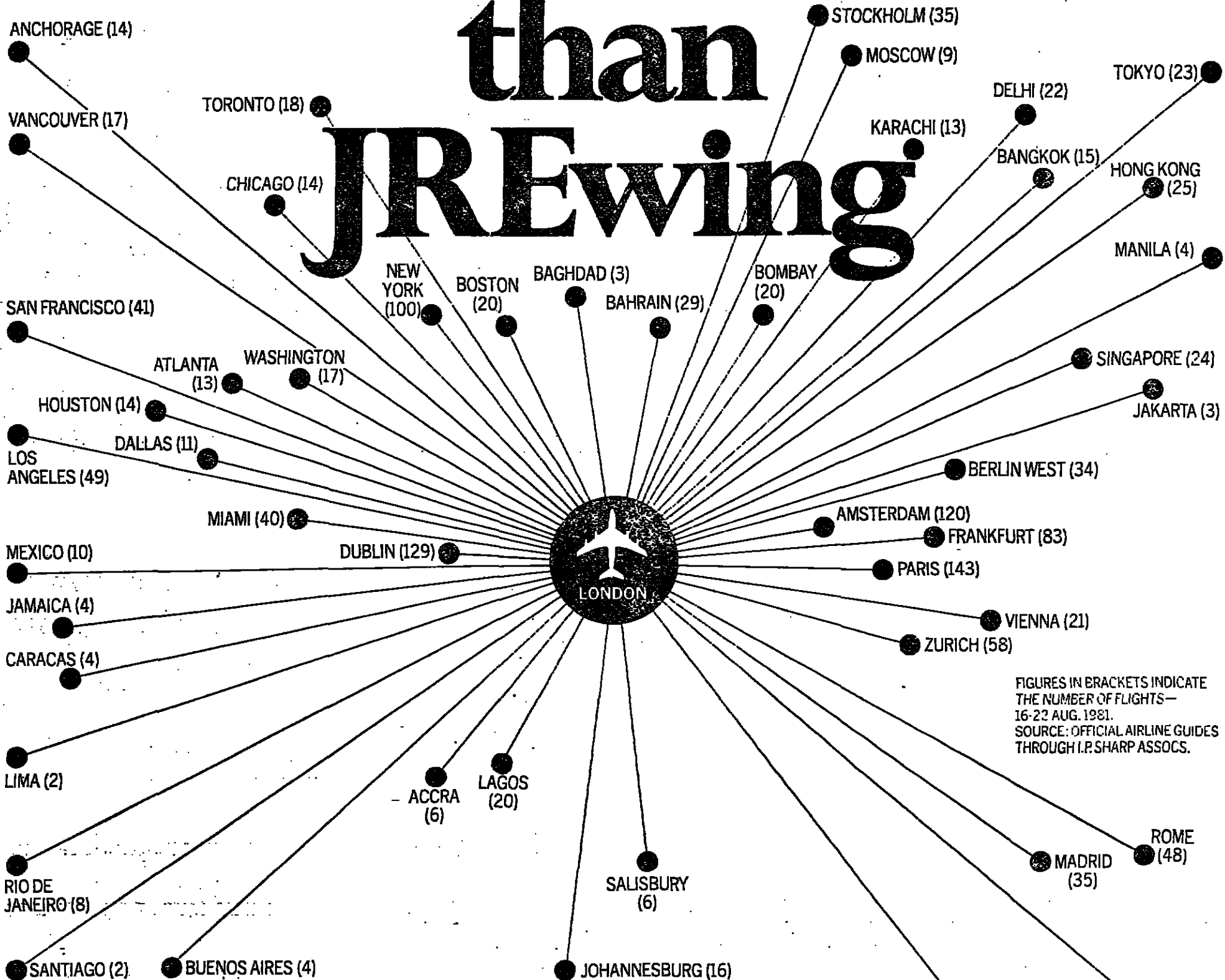
He will stand against Mr Alastair Graham, the union's deputy general secretary, for the post.



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## THE MANAGEMENT PAGE

## Why a clog in the patent pipeline is obvious

A. H. Hermann reports on the after-effects of the overhaul of the UK patent system

WHEN THE Patent Act of 1977 came into force it represented the first complete rewrite of British patent law since 1852. However, in the four years since the system was overhauled virtually no patents have been granted under the new Act.

So what has gone wrong with a system of which great things were expected—not least that it would be of assistance to small firms? The Act brought British legislation into line with the European Patent Convention. It replaced the archaic language of 1852 with a lucid, modern style. It introduced stricter conditions relating to the granting of patents which may yet prove a barrier against the flood of minor transatlantic patents seeking ratification in Europe. At least this is what France, the only country where patents are not examined before being granted, expects from the European patent system.

The new system provides information about new developments much more quickly than before, but so far it has not proved to be of great benefit to those seeking protection for their inventions.

The patent system has been saddled from the very beginning with two contradictory objectives: one is to provide an incentive to inventors by granting them a temporary monopoly on the exploitation of their invention. The other objective is to stimulate and facilitate technological progress by assur-

ing the publication of new inventions.

The publication of the invention is the price which—in addition to the fees of the Patent Office, the patent agents and lawyers—the inventor pays for his monopoly.

Those who are in the business of working on new inventions and improvements obviously prefer early publication because they need to know what others are doing. Those who have made an invention as a result of unique circumstances, or to solve a "one-off" problem encountered in production, will be primarily interested in the quick granting of a patent to protect the exploitation and enable the licensing of the new invention. Large, research-based companies tend to be in the first category and small enterprises and individual inventors in the second.

## Surprise

The 1977 Act and the European Patent Convention have shifted the balance in favour of those who are primarily interested in early disclosure of new inventions and made the granting of patents and their defence in the courts more difficult. This shift could be foreseen at the time the Bill was passed, though the extent of it has probably taken many people by surprise. It is one of those cases where the logistics of an

operation have created a situation much different from that originally contemplated.

Under the pre-1977 system there was only one publication of the invention and that took place at the time the specification was accepted—about three months before the patent was granted. The patent game was usually started by filing a first application with a provisional specification describing the invention in outline. A complete specification was then filed within a year and with a certain amount of luck the patent could be obtained in another year's time; but more often it took three to 3½ years from the first application.

The examination which took place after the filing of the complete specification was relatively undemanding. The application satisfied the requirement of novelty if the invention could not be traced in British patent specifications in the last 50 years. The question of "inventiveness" or "non-obviousness" used to be considered only at the request of an opponent of the grant. In all other cases, if there was no opposition, the question was left open and could be tackled later in the courts.

The 1977 Act introduced much stricter requirements for the examination of patent applications. To grant a patent, the Patent Office now has to be satisfied that there is an "absolute novelty"; that is,

that it has been published nowhere in the world in the preceding 50 years. Moreover, the non-obviousness has now to be determined before a patent is granted. The invention has to involve an "inventive step," about which it can be said that it has contributed towards furthering human knowledge.

However, as no patents have yet been granted under the new system the only guidance as to what is the "inventive step" is contained in the Patent Office Examination Manual.

The sad truth is that it now takes about 4½ years before a patent is granted.

As the yearly input of new applications is about 40,000, the Patent Office must now have some 150,000 applications in the pipeline. So far only patents for which applications were made before the 1977 Act are appearing. Patents granted under the new Act will start coming out, it is hoped, early in 1982. Applicants can jump the queue only in exceptional circumstances if they succeed in convincing the Patent Office that the delay is causing them a "real and substantial hardship."

The slowing down of the Patent Office output is a result of the new requirement to publish the specification within 18 months of the application being filed and then again, for the second time, when the patent has finally been granted.

It has become evident that this doubling of the publishing code

could not be accommodated by the publishing and printing system of the Patent Office which cannot handle more than some 50,000 patent specifications a year. The Patent Office decided to give absolute priority to the preliminary publication of specifications filed under the new system. These amount to some 30,000 each year. Consequently, the remaining publishing capacity amounts to only 20,000 patents a year—and this is why a backlog has accumulated over the past four years.

## Diminish

This development was not foreseen in 1977. Then there were high hopes that the establishment of the European Patent Office would relieve the British Patent Office of most of the overseas applications, reducing its input by some 60 per cent. In fact, its input has been reduced by only 16 per cent, and there is no immediate prospect that the availability of the European patent will diminish the number of British domestic applications.

Any reduction of the backlog of the British Patent Office will, therefore, depend on increasing the capacity of its publishing system. This would probably require a qualitative change of the system.

Though the Patent Office sits, so to speak, on the source of technological innovation, it was rather slow in applying new

technology to its own operation. Amending specification drafts seems to be a task eminently suitable for word processing machines linked to automatic setting and offset printing.

However, the Patent Office still relies on a manual process. Some five to six printing companies are employed on turning out over 50,000 patent specifications a year. It is all small batch printing, as only about 110 copies are required in each case. Such small batch printing capacity is not widely available so output cannot be expanded.

The 4½-year wait for the granting of a patent may be acceptable to a large corporation which can meanwhile exploit the patent in its own factories, especially as it can be reasonably certain of being granted the patent on the basis of the experience and special skills accumulated in its patent department.

The situation is different for an inventor who lacks the means for a direct exploitation of the patent or who for other reasons depends on its licensing. Such an inventor has to wait until the patent is granted before he can start negotiations for its licensing.

Also the defence of the invention presents different problems for a small company, on the one hand and a large, financially strong company, on the other.

Infringement actions can be brought only after the patent has been granted and, as patent



The 1977 Act and the European Patent Convention "have made the granting of patents and their defence in the courts more difficult."

litigation is a trial by torture, the party which has greater financial resources is in a better position to defend its invention. The best protection, therefore, against the small possibility of keeping the

recession in the car markets of Western Europe and the U.S. at a time when the industry is undergoing substantial restructuring could require temporary protective measures until the next upswing in demand in the mid-1980s.

And Jones says the time has come for the U.S., Europe and Japan to get together to find a mutually acceptable solution that stops short of protection. "This would involve restraint by the Japanese and an avoidance of competitive restrictions by the North Americans and West Europeans."

The exact form in which the negotiations take place is less important than the fact that they should at least be bilateral in nature.

*Sussex European Papers No 8. Maturity and Crisis in the European Car Industry, by Daniel T. Jones, available from European Research Centre, University of Sussex, Falmer, Brighton, price £4.*

## A perceptive view of the automobile industry

Kenneth Gooding reports on a new study

DURING THE 1980s, upheavals are bound to beset the European motor industry. So, a constantly nagging question is, which companies will survive?

The Europeans are hemmed in by the Japanese manufacturers and are thus priced out of most markets and restricted to areas, like Europe and the U.S., of relatively little growth potential.

They are having to spend huge sums—around £10bn over the next three years—to produce the right cars for a post oil crisis world, yet they are unsure about which type of new technology will be marketable. The majority opinion, therefore, is that some restructuring will have to take place. But within the industry itself diplomacy usually prevents any public discussion about which companies will come through.

And that encourages those on the fringes of the industry to draw up their own lists.

The latest forecast deserves attention because it is contained

in a well-researched and carefully argued paper from Daniel T. Jones, an industrial economist and until recently a senior research fellow at the University of Sussex European Research Centre.

He suggests that, within Europe, General Motors and Ford look like remaining relatively strong throughout the 1980s—as do Volkswagen, Renault and "with less certainty" the Peugeot-Citroen-Talbot group.

"The only real threat to their freedom of action is Japanese import competition based on superior production efficiency."

However, nearly all the remaining volume car producers, particularly Fiat, Alfa

Romeo, BL and Seat, are constrained by weaknesses in both product technology and inferior process efficiencies, according to the author.

"In most scenarios these companies face the probability of some form of merger or tie-up with more successful volume producers, including the Japanese."

Only if Europe opts for highly-protectionist measures would they stand a chance of remaining independent, with Fiat the most likely survivor of the four.

The co-operation road might look attractive to the weaker car companies but "in the longer term it can lead to progressive dependence and eventual takeover."

"Simply to rely on co-operation and production of another company's model under licence may be an attractive way of rationalising the weaker companies but cannot be seen as a way of catching up and remaining independent in the long run," says Jones.

"As a way of gradually restructuring the industry over a period of years, though, it is possibly an ideal solution and avoids some of the managerial difficulties that accompany a sudden acquisition of a new company."

"In this light, government encouragement of this form of restructuring is to be welcome." One of the other questions to be resolved in the years ahead is: what happens to

the low-volume specialist producers?

Jones suggests that Daimler-Benz, the Mercedes group, is likely to survive in its present form with few immediate problems.

And Volvo and Saab, the two Swedish producers, have already begun developing links with Renault and Fiat respectively.

There are three possibilities for BMW, according to Jones: Full takeover by a volume car company;

Some form of loose co-operation in engines, components and so on and possibly even sub-contracting assembly to a volume producer so as to concentrate on innovative and specialised design;

Or going even further and

perhaps concentrating solely on design or perhaps engine design and manufacture.

Jones, like others before him, says that protectionism will be the biggest policy issue facing European governments in the first half of the 1980s.

Protectionism in Western Europe so far has probably kept out something like 500,000 cars a year from Japan—or the equivalent of two assembly plants and one engine plant of minimum efficient scale, he estimates.

This would be made up of 120,000 in Italy, 70,000 in Spain and 150,000 in both France and the UK on the assumption that the Japanese could have taken 10 per cent of the market in Italy, Spain and France and 20 per cent in the UK.

The nub of the protection problem, as far as Western Europe is concerned, is the pressure of increased imports on an industry whose structure will anyway undergo major changes as a result of internal pressures.

But Jones warns that, given the difficulty of reversing protectionist measures and the implications for a retreat to protectionism in such a major item of world trade as cars, such a course should only be embarked on with the utmost caution and after lengthy consideration.

He goes so far as to suggest there is little need for protection in Europe in the medium term, although in the longer term, the severity of the

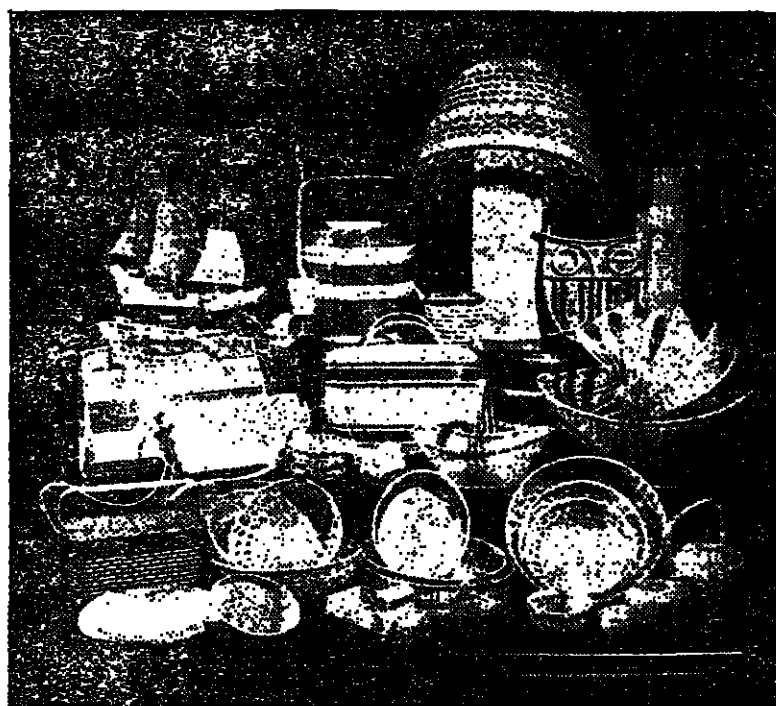
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# The birching conundrum

CONSTITUTIONAL convention, which lay at the heart of the recent judgments in the Supreme Court of Canada, returned to its imperial home last week before the Isle of Man appeal court.

Three years ago, corporal punishment was decreed by the European Court of Human Rights in the Tyrer case as a degrading punishment, and a basic violation of a basic human right. Thereafter, the UK Government was liable internationally to change the law of the Isle of Man.

Faced, however, with the convention that Parliament at Westminster will not legislate for the Isle of Man in relation to the island's internal affairs (including penal policy), although strictly the sovereign power lies with the UK Government—and an obdurate parliament in the Isle of Man, which declined to take flowing off its statute book, nobody on the mainland took any action.

No doubt it was hoped that either the sanction of birching would fall into disrepute on the Manx courts, or the European Court would pronounce that, following the European Court's ruling, it was no longer feasible for the courts to pass such a sentence on an offender. In the event, neither way out of the dilemma was taken.

This summer a young Glaswegian, who had become thoroughly inebriated on a cross-Channel steamer seriously assaulted a person on his arrival in the Isle of Man. The magistrates before whom the offender appeared were given a copy of the European Court's judgment in Tyrer, but were instructed on a writ of habeas corpus to order a birching. Since corporal punishment had already been outlawed by the European Court, the magistrates considered the alternative penalties available, and only when none of these was appropriate could they even begin to entertain the question of flogging. Even then, the magistrates would have to be aware that in passing such a sentence they would in effect be putting the British government back in the international dock for having again violated a provision of the Human Rights convention.

The problem has, however, by no means gone away, because the appeal court felt unable to substitute what it thought was the appropriate penalty. Instead, the court sent the case back to the magistrates with an indication that they should probably be dealing with an institution for young offenders.

But what if the magistrates reject that advice and insist that corporal punishment is the only appropriate penalty, and one which in fact the offender seems to desire rather than to have to undergo a loss of liberty for however short a period?

While Manxmen sort out their constitutional problems, Scotland's educationalists await another pronouncement from Strasbourg on corporal punishment, this time its use as a disciplinary measure in schools.

Two children at St. Matthew's Roman Catholic School in Bishopscleeve and South Senior High School in Cowdenbeath respectively, were suspended from school as a result of their parents' protest at the intended imposition of the twelve on their offspring. Their cases were upheld by the European Commission of Human Rights in May 1980 and referred to the court which heard them at the end of last month.

The Commission had held that Article 2 of the First Protocol to the European Convention on Human Rights, which states: "In the exercise of any functions which it assumes in relation to education and to teaching, the state shall respect the right of parents to ensure such education and teaching in conformity with their own religious and philosophical convictions," constituted a violation of the right of parents to educate their children in private schools.

The Commission went on to hold that governments were bound to show respect for parents' philosophical convictions in state-run schools, and the mere availability of alternative private schools did not detract from the state's obligations under Article 2. For both financial and practical reasons there were no other realistic and acceptable alternatives to the parents' but to send their children to state schools.

Since both children had not actually been beaten by their headmaster, there was little reliance placed upon the argument that birching is a degrading punishment. But one Commissioner in a separate opinion recalled the Isle of Man case, adding that during the period Tyrer had "waited for the punishment to be inflicted he suffered mental anguish, which was one factor that led the European Court to conclude that the penalty was a degrading punishment."

## THE WEEK IN THE COURTS

BY JUSTINIAN

The appellant sought the flagellation.

Curiously, this was a repeat of what occurred in the Tyrer case when the applicant at Strasbourg sought to withdraw his application. The European Court likewise declined to be fobbed off from condemning corporal punishment.

The appeal court judges in the Isle of Man were obviously not desirous of getting the politicians off the hook. While they quashed the order of birching, they did not absolutely rule out the reliance upon the penalty in the future.

What they said was that, so long as the birching law remained unreppealed (and no international body or court could repeal a Manx law), the magistrates could lawfully pass such a sentence. But they had first to consider all the alternative penalties available, and only when none of these was appropriate could they even begin to entertain the question of flogging. Even then, the magistrates would have to be aware that in passing such a sentence they would in effect be putting the British government back in the international dock for having again violated a provision of the Human Rights convention.

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## Black players make their presence felt

**SOCCER**  
**TREVOR BAILEY**

Walcott and Sobers, copied admirably with fast bowling. It could well be that the coach's judgment was the outcome of an inborn and unintentional ethnic prejudice. I wonder what he thinks today when not only most League teams include at least one black player but also many of them are among the best and most exciting around, Cunningham, Fashanu, Anderson, Hilaire, Moses, Bateson and Regis, to name but a few.

There are several reasons for this black explosion in League football.

First, a remarkably high percentage are naturally gifted athletes, with fine physiques, fast reflexes and flowing grace and rhythm.

Edson Arantes de Nascimento, better known as Pelé, was surely the greatest of all goal scorers. He scored 1,363 goals in his career when there was an abundance of close marking, packed defences and not very scrupulous defenders.

I particularly treasure an instant of Cunningham, a left-footed volley at goal from a right-wing cross with his body parallel to and at least three feet off the ground.

Most of the blacks in League football have above average ball control, whether they are defenders like Anderson, or forwards like Crooks.

Secondly, standards of football in the countries from which the black immigrants came were not high. It is the sons and the grandsons brought up in England who have made the breakthrough.

Thirdly, football provides the opportunity for a boy from a comparatively poor home and not infrequently, limited education, to make a great deal of money quickly. It is not so finally. It has always helped, especially in team games, for the good player to have easily distinguishable characteristics. He stands out and so makes it easy for selectors and the media.

The black player regrettably did, and to a lesser degree still does, encounter some hostility from the more stupid among the white crowd.

My own reaction to barracking was to make me even more determined and, assuming the black footballers adopt a similar attitude, the abuse will prove counter-productive. He will find the majority of his team mates remain unconcerned about ethnic problems.

In the long term the presence of an increasing number of outstanding black footballers in our League and international team should help race relations.

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## Wide choice of rackets is bewildering

**TENNIS**  
**JOHN BARRETT**

THERE WAS A TIME when the simple decision to buy a new tennis racket involved merely the choice between natural gut and synthetic strings in a wooden frame from one of the half-dozen manufacturers whose ranges appeared in every reputable sports store.

The choice nowadays is bewildering. Big head or mid-head; round head, oval head or pear-shaped head; graphite or wood, fibreglass or aluminium, boron... or perhaps, composite.

It has been one of the game's oddities that, until July, there have been no rules governing the size and shape of tennis rackets. However, exotic stringing systems that imparted undue amounts of spin were banned two years ago.

Rules were unnecessary before the arrival of the jumbo rackets, for it is no accident that the overall dimensions of a racket have changed little over the century of the game's existence.

To hit a moving ball weighing 2 oz with proper power and control the average human being requires a racket that weighs between 12½ and 14½ oz, is about 27 ins long and contains a taught stringing system that allows him to "feel" the ball.

Anything smaller or lighter is too flimsy; anything larger or heavier is clumsy.

The earliest rackets were one-piece bends of ash. The introduction of the laminated frame (thin strips of wood and fibre glued together) in the 1920s produced a stronger frame that could be made lighter and more flexible.

String tensions could also be increased without pulling the frame out of shape.

Innovation began in earnest after the second world war. Although metal rackets were nothing new, the steel frame produced by the French musketeer Rene Lacoste in the late 1950s was revolutionary, with the stringing system suspended from a wire wrapped around the head of the racket.

New manufacturers have proliferated since 1968 when open tennis launched the world-wide tennis boom. They are skilled in the use of metal, fibreglass and the space-age materials graphite and boron.

The lighter, stronger materials allowed greater design flexibility. It was the advent of the oversize heads and other unusual shapes, thought by some to offer unfair advantages that led to this year's rule change. This requires a uniform

string distribution and limits the overall length to 29 in, the overall width to 11½ in, and the string surface to 15½ in length and 11½ in width.

There seems to be general agreement that the oversize rackets help the older players to get more balls into court. Even some of the circuit professionals appear to have improved their performances with these models.

Perhaps in the end the mid-head will be the racket of the future. Certainly many manufacturers have entered this segment of the market, so the choice here is widest.

However, even the experts are confused about the permutations available, so before you buy your next racket I would advise you to persuade your rich friends to lend you their new model for an afternoon's trial. Performance is undoubtedly very specific.

Personally I am inclined to my graphite racket, but I want to change.

## Cecil set for more wins

**RACING**  
**BY DOMINIC WIGAN**

HENRY CECIL introduced another high-class colt in *Paradis Terrestre* at a rain-soaked and wintry Ascot on Saturday and he must be looking forward to 1982 with more than a little hope.

Although the Empress bay *Paradis Terrestre*, a tall son of the Songador mare *Pixie Tower* proved head and shoulders above his equally well bred opponents in the Hyperion Stakes, bookmakers were not altogether impressed.

*Paradis Terrestre* was immediately offered at 20-1 for the 2000 Guineas and there were few takers. However, interest continues to gain momentum in Warren Place's other candidate for that race, *Singly Great*. The MME's reef is down to 7-1 with most layers.

Simply Great reappears in Friday's William Hill Dewhurst Stakes for which he is an assured favourite in spite of

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### BBC 1

6.40-7.55 am Open University (Ultra High Frequency only). 9.08 For Schools. Colleges. 10.00 You and Me. 10.15-12.07 pm For Schools. Colleges. 12.30 News After Noon. 12.57 Regional News for England (except London). London and SE only. Financial Report. News Headlines. 1.00 Pebble Mill at One. 1.45 Check-A-Block. 2.01 For Schools. Colleges. 3.00 See Hear. 3.25 Delta Smith's Cookery Course. 3.45 Regional News for England (except London). 3.55 Play School. 4.20 Mighty Mouse. 4.25 Jackanory. 4.40 Jigsaw. 5.05 John Craven's Newsround. 5.10 Blue Peter visits Beppu in southern Japan. 5.40 News. 6.00 Nationwide (London and South East only). 6.25 Nationwide. 6.55 Angels. 7.20 Blake's Seven. 8.10 Panorama. 9.00 News. 9.25 The Monday Film: "A Man Called Horse" starring Richard Harris. 11.15 Film 81. 11.43 News Headlines. 11.45 Speak For Yourself.

### BBC 2

6.40-7.05 and 7.50-7.55 am Open University. 10.10 Supervisors. 10.35 Speak For Yourself. 11.00 Play School. 11.25 Write Away. 1.35 pm A Woman's Place? 2.20 Let's Go. 2.35 Inside Japan. 3.05 Television World. 3.30 Anglo-Saxon Attitudes. 4.50 Open University. 6.55 Paint. 7.30 News Summary. 7.35 Tales of Twelve Cities. 8.10 Des O'Connor Tonight. 8.40 A Kick Up The Eighties. 9.30 Horizon. 10.25 The Innes Book Of Records. 10.50 Newsnight. 11.35-12.05 am Heute Direkt.

### ANGLIA

12.30 pm Botanic Man. 1.20 Anglia News. 2.00 Monday Film Matinee: "Scaramouche" starring Stewart Granger. 5.15 Bless Me Father. 6.00 About Anglia. 6.30 Survival. 10.30 Anglia Reports. 11.00 Anglia Late News. 11.05 A New Kind of Family. 11.35 The Monday Show (Nil Sendable). 12.35 am Festival.

### ATV

12.30 pm Botanic Man. 1.20 ATV News. 2.00 Monday Matinee: "Gigi" starring Leslie Caron. 5.15 Joe 90. 6.00 ATV Today. 10.30 Laila. Right and Centre. 11.10 ATV News. 11.15 Roots. 11.45 The News Avengers.

### BORDER

12.30 pm Botanic Man. 1.20 Border News. 2.30 Monday Matinee: "Sleeping Car to Trieste" starring David Niven. 5.15 Survival. 6.00 Lookaround. 6.15 Border Disco Dancing Championship. 10.30 George and Mildred. 11.00 RL Action: Bradford Northern v St Helens. 11.45 Border News Summary.

### CHANNEL

12.30 pm Botanic Man. 1.20 Channel Lunchtime News. What's On Where.

### RADIO 1

(S) Stereophonic broadcast. 5.00 am to 12.00 pm. 7.00 Mike Read. 9.00 Simon Bates. 11.30 Dave Lee Travis. 2.00 pm Paul Burnett. 3.30 Steve Wright. 5.00 Andy Peebles. 7.00 Stayin' Alive. 8.00 David Jensen. 10.00-12.00 John Peel (S).

### RADIO 2

5.00 am Ray Moore (S). 7.30 Terry Wogan (S). 10.00 Jimm. Young (S). 12.00 John Dunn (S). 2.00 pm 3.30 Stewart (S). 4.00 David Hamilton (S). 5.45 News and Sport. 6.00 David Synnott with Much More Music (S). 8.00 Folk on 2 (S). 9.00 Humphrey Lytton with the Best of Jazz (S). 9.55 Sports Desk. 10.00 Pop Score. 10.30 Star Sound. 11.00 Brian Matthew.

### RADIO 3

6.55 am Weather. 7.00 News. 7.05 Morning Concert (S). 8.00 News. 8.05 Morning Concert (continued). 9.00 News. 9.05 This Week's Composer. Mozart (S). 10.00 Cheltenham String Quartet (S). 11.15 BBC Scottish Symphony Orchestra (S). 1.00 pm News. 1.05 BBC Lunchtime Concert (S). 2.00 Martine Rothblatt (S). 3.00 New Records (S). 4.55 News. 5.00 Mainly for Pressure (S). 7.00 Shostakovich's 48 (S). 7.45 Haydn (S). 8.00 Frankfurt Radio Symphony Orchestra.

### RADIO 4

6.00 am News Briefing. 6.10 Farming Week. 6.25 Shipping Forecast. 6.30 Today. 8.35 The Week on 4. 8.45 Woodhouse. 9.00 News. 9.05 Start the Week with Richard Baker. 10.30 Daily Service. 10.40 Morning Story. 11.00 News. 11.05 Down Your Way visits.

### GRAMPIAN

9.25 am First Things. 12.30 pm Botanic Man. 1.20 North News. 2.00 Monday Matinee: "Casino Royale" starring David Niven and Peter Sellers. 5.15 Mark and Andy. 6.00 North Tonight. 6.30 Country Focus. 10.30 The News Avengers. 11.30 Cover to Cover. 12.00 The Amazing Years of Cinema. 12.30 am North Headlines.

### GRANADA

12.30 pm Botanic Man. 1.20 Granada Reports. 2.00 Monday Matinee: "Carve Her Name with Pride" starring Virginia McKenna and Paul Scofield. 5.15 Give Us a Clue. 6.00 Granada Reports. 10.30 Ladies Man. 11.00 RL Action: Highlights of the fixture between Bradford Northern and St Helens. 11.45 Charlie's Angels.

### HTV

12.30 pm Botanic Man. 1.20 HTV News. 2.15 "Trader Horn" starring Rod Taylor. 5.15 The Flintstones. 6.00 Report West. 10.25 HTV News. 10.30

### SCOTTISH

12.30 pm Botanic Man. 1.20 News and Weather. 2.00 Monday Matinee: "A Place of One's Own" starring Margaret Lockwood and James Mason. 5.15 Emmerdale Farm. 6.00 Scotland Today. 6.30 Crimewatch. 10.30 Late Call. 10.35 Terror on Monday: "Scream and Scream Again" starring Vincent Price.

### SOUTHERN

12.30 pm Botanic Man. 1.20 Southern News. 2.00 Houseparty. 2.25 "Passage Home" starring Diane Cilento. 5.15 Happy Days. 6.00 Day by Day. Including Southport. 10.35 Thriller: "Look Back in Darkness" starring Superstar Profile.

### TYNE TEES

9.20 am The Good Weekend. 1.20 North East News and Lookaround. 1.30 Portraits of Power: Stalin, Man and Image. 2.30 Monday Matinee: "Beach Party" starring Bob Cummings. Dorothy Malone and Frankie Avalon. 4.15 Cartoon Time. 5.15

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هكمان النحل







Monday October 12, 1981

## Agenda for the Tories

OVER AT least the past decade Britain has suffered from two main economic problems: low growth and high inflation. Other countries, France, for instance, have had the inflation, but have managed to achieve growth at the same time. West Germany has had relatively low inflation and relatively high growth throughout the period, and indeed for most of the last 30 years. Britain is unusual in having both economic diseases simultaneously.

### Less competitive

It was this problem which the present Government came to power determined to resolve. In the words of Sir Geoffrey Howe, the Chancellor of the Exchequer, the task was "to halt and then reverse the long decline." The decline may have been relative, but the fact was that Britain was becoming steadily less competitive with other industrialised countries.

The Government also made clear from the start its chosen methods: it eschewed controls, whether on wages, prices, dividends or the movement of capital. The experience of the past was that controls provided short-term palliatives, but no lasting solutions.

This Government's approach was to rely on a mixture of market forces and exhortation. Above all, it sought to bring about a change in expectations — an appreciation of the fact that there are limits to the extent to which governments or companies can go on spending money which they do not have and do not earn. Such an appreciation is much more common in (say) Germany: in Britain it has to be taught.

### Valid as ever

For a variety of reasons, the task has proved more difficult than was foreseen. The Government inherited a range of commitments to increased pay in the public sector. The oil price rose almost as drastically as it did in 1973-74 and the world recession has been deeper and longer than expected.

No-one foresaw the volatility of the exchange rate as sterling became a petro-currency. No-one anticipated what amounts to an interest rates war across the Atlantic. It is also probably the case that, in voting for change in principle, the electorate was not entirely prepared to take the necessary medicine.

And yet, nearly two and a half years later, it seems to us that the Government's original objectives are as valid as ever. The fundamental economic problem of this country remains a lack of international competitiveness, of which low growth and high inflation are the symptoms. The job of government is to persuade the people that this is so, and to tackle the problem at its roots.

This Government has, of course, made many mistakes. It was foolish, in retrospect, to increase inflation in its first year by raising VAT. The effect on expectations was precisely the opposite of what the Government wanted. It was just as unwise to cut direct taxes before the compensating reductions in public expenditure had been secured — as President Reagan is now finding in the U.S.

### Key element

There have also been numerous errors in the way policies have been presented. It is remarkable that the Government should have allowed itself to be labelled exclusively monetarist, even by some of its own nominal supporters, when the central tenet of Sir Keith Joseph's thinking is "monetarism is not enough."

The control of the money supply would be a key element in the economic policy of any administration. So would the control of the public sector borrowing requirement, whatever a new government might do in its first carefree year of office. It is this Government's own fault that it is stuck with the reputation of being rigid when frequently its actions are not much different from those of its predecessors.

It is the same with public expenditure. The Government's critics, again including Conservatives, overlook the money that has gone into the British Steel Corporation and BL, or is now pledged to relieving youth unemployment and encouraging industrial training. The Government has, in fact, been the victim of its own rhetoric. It has spent money as if it were ashamed of it, and thus failed to draw any credit for it.

It has also shown, however, that it is capable of correcting its course. Sir Geoffrey's budget last March restored some fiscal balance by taking back in taxes what had gone in excessive public spending. In his television interview yesterday, the Chancellor rightly hinted that he will be prepared to do the same next time, if spending is not controlled. This is not the inflexibly monetarist administration that is sometimes portrayed.

The Government's other assets owe something to recession, but exist none the less. Unit labour costs have been relatively stable and productivity has consequently increased. The size of pay settlements has been coming down, both in the public and the private sectors. Inflation is still a danger, but it is lower than most people would have predicted a year ago. The attempt to influence general expectations seems to be working.

### Market economy

At the half-way stage, when politicians and the media start thinking of the next general election, no-one would suggest that this is an ideal situation. Yet it is one in which the Government could successfully build. There are certain themes which could be usefully taken up.

Mrs Thatcher's team has too often given the impression that it is interested only in the performance of certain economic indicators — as if the economy were a model rather than a collection of people. What has been missing is the element of compassion. It has been the market economy that has been presented rather than the social market economy of Ludwig Erhard. The latter deliberately provides a safety net for the disadvantaged and the unemployed. It would be entirely compatible with this Government's approach and with the pursuit of growth without inflation.

There are areas, such as the power of the unions and of the nationalised industries, which remain to be tackled. The decentralisation of wage bargaining, for example, could be taken much further. The Social Democrats have already shown what a popular theme this is. Equally, the Government should adopt a less restrictive attitude towards viable public sector projects which could be financed with long-term borrowing.

Such changes can be accommodated within the Government's present strategy, the crucial question, however, is whether the progress so far made in changing attitudes and expectations can be maintained. The Government has yet to convince the electorate, including many of its own supporters, that a permanent reduction in unemployment can only come from changes in competitiveness, not from reflation.

JUST AS British companies have been learning to live at the bottom of the recession for an indefinite period, they have been up in the past few weeks by the sharp rise in interest rates and the subsequent volatility of the money markets.

The increased cost of borrowing has meant that a lot of businessmen have had to extend their de-stocking and reduce their work-in-progress more than they had intended. Others have considered delaying investment projects or even closing operations they had hoped to keep open, shedding workers.

This has coincided in recent weeks with a spate of redundancy and factory closures. While on a considerably smaller scale than last winter, these show that companies are still facing serious financial problems, especially as many face up to the prospect of flat demand for many months ahead.

On the other hand there are bright spots. In a variety of areas there has been a slight improvement in business activity. The fall in the value of sterling has had some impact, though this has more often enabled companies to improve their profit margins than to secure extra foreign orders. But even without gaining much from the movements in sterling, several companies have sometimes surprised themselves by landing substantial overseas orders recently.

If interest rates stay high, they could tip some parts of industry into a new recessionary slide. Businessmen in every major industrial region from Scotland to the north-west, north-east and the west Midlands are discussing this possibility.

### Strengths in oil and electronics

"There are a lot of people here whose security is on a knife edge — only a slight tip back into recession might lead to large closures," says one leading north-west industrialist.

In Scotland, where optimism has been generally stronger during the recession because of its strengths in oil and electronics, and the fact that its heavy industries started restructuring 20 years ago, I was told: "The risk now is that good companies might go under this winter. We've not had a major company lost in this recession — we're saved. But we may soon lose that record." Engineering companies and carpet manufacturers are thought to be especially vulnerable.

On the other hand, an early fall of a couple of points in the banks' base rate from the present 16 per cent level might start to rebuild industrial confidence as a crucial aid. Some people are openly trying to talk the economy into a more buoyant mood. Mr Patrick Jenkin, Industry Secretary, having declared himself the spokesman for industry in the Cabinet

last week, stressed his belief that the worst of the recession was over, a point which industrialists believe is unjustified.

The issue turns on the definition of recession. As Mr Trevor Holdsworth, chairman of GKN, says: "Our definition now is 'operating at too low a level of activity continuously,' whereas it used to be simply a 'downward slope.'"

On that definition, many businessmen would quarrel with Mr Jenkin as well as representing the attempts by Sir Geoffrey Howe, Chancellor of the Exchequer, to write the recession off at the end of July.

But, like many industrialists, Mr Holdsworth does acknowledge that life has improved so that "people can now see much more clearly where the bottom of the recession is and are adjusting to it."

In Scotland the new regional chairman of the CBI, Mr Jim Gould, a house builder, openly admits he wants to talk businessmen into the mood of confidence that could help raise demand.

Businessmen must take a little bit of a risk now and push their way out of recession," he declares.

What is causing special concern, however, is the spate of announcements of closures and redundancies in the past few weeks. The most dramatic is probably BL's total of 3,500 planned redundancies and Rolls-Royce's long-term plan to shed 15,000 jobs over five years.

Other companies are taking action which they may have hoped earlier in the year could be avoided: ● GKN, having carried out major restructuring exercises in the past year with substantial redundancies, has been forced by flat demand to shed another 400 staff in its fasteners division.

● ERF, responding to the commercial vehicle industry's

**ERF to cut workforce and sell off some assets**

BY EDITH GOODMAN, MOTOR INDUSTRY CORRESPONDENT

ERF, the German commercial vehicle manufacturer, has announced plans to cut its workforce by 10 per cent and to sell off some of its assets.

The company, which has been hit hard by the recession, is also planning to reduce its research and development costs.

ERF's chairman, Dr. Hans-Joachim Heyer, said: "We must take drastic measures to ensure the company's survival."

The company's 1981 sales are expected to fall by 10 per cent, and its losses are likely to increase.

ERF is also planning to sell off some of its non-core assets, including its interest in the German truck manufacturer, MAN.

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## BRITAIN IN THE RECESSION

# Blighted hopes of a revival

By John Elliott, Industrial Editor

**ERF to cut workforce and sell off some assets**

BY EDITH GOODMAN, MOTOR INDUSTRY CORRESPONDENT

ERF, the German commercial vehicle manufacturer, has announced plans to cut its workforce by 10 per cent and to sell off some of its assets.

The company, which has been hit hard by the recession, is also planning to reduce its research and development costs.

ERF's chairman, Dr. Hans-Joachim Heyer, said: "We must take drastic measures to ensure the company's survival."

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**Rolls-Royce aims to shed 15,000 jobs in five years**

BY LYNNE MANN

Rolls-Royce, the engine manufacturer, has announced plans to shed 15,000 jobs in five years.

The company, which has been hit hard by the recession, is also planning to reduce its research and development costs.

Rolls-Royce's chairman, Sir Roy McEwan, said: "We must take drastic measures to ensure the company's survival."

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**BL's Longbridge to lose 1,500 more**

BY ALAN FINE, MOTOR INDUSTRY CORRESPONDENT

BL's Longbridge plant, the car manufacturer, has announced plans to lose 1,500 more jobs.

The company, which has been hit hard by the recession, is also planning to reduce its research and development costs.

BL's chairman, Sir Roy McEwan, said: "We must take drastic measures to ensure the company's survival."

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## FINANCIAL TIMES SURVEY

Monday October 12 1981

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## OFFICE EQUIPMENT

New technology and shifting economic circumstances are bringing rapid changes not only in office working methods but also in the nature of the work being done. Many of the latest technical developments and systems will be highlighted at this year's International Business Show at the National Exhibition Centre, near Birmingham, from Tuesday, October 20 to Thursday, October 29.

## Era of rapid change

By Guy de Jonquieres

FOR MOST of this century office organisation and methods have undergone only gradual and subtle change.

While mass-production and automation have profoundly transformed manufacturing industry and the lives of those employed in it, many office workers are still doing jobs that differ only in detail from those performed by their parents and grandparents.

Office equipment has also followed a broadly evolutionary path. Until recently product innovation was aimed at improving the efficiency with which a particular task was done rather than altering its essential character.

Thus the plain-paper copier has superseded the stencil duplicator, the PABX has succeeded manual telephone switchboards, and tape recorders—first with spools and now with cassettes—have replaced wax cylinder dictation machines.

But strong pressures are now combining to break this established pattern. New technology, stimulated by and in turn stimulating shifting economic circumstances, is changing both office working methods and the nature of the work done.

The starting point and to a large extent the driving force is the micro-electronic revolution. The low-cost silicon chip, manufactured by the million, is increasingly replacing gears, wheels, levers and drive shafts. Tireless and almost trouble-free, the chip can perform endlessly repetitive tasks with far greater precision and reliability than machines with moving parts.

But the chip is more than just a substitute for machinery: it also extends the range of human effectiveness. For example, the executive with a desk-top micro-computer has more power at hand to process and store information than can be provided conveniently and at equal cost in any other form.

Similarly, electronic word-processors enable changes to be made easily both to the content of a document and to the format in which it appears. Individual words can be corrected, or lines omitted or the sequence of whole paragraphs re-ordered without the need for laborious re-typing.

Electronics are transforming not only the techniques for processing information but also the means by which it is transmitted and distributed. The latest digital communications

systems process both data and speech in exactly the same form as computer "language"—as a stream of electronic pulses composed of zeroes and ones.

The most modern telephone exchanges, such as Britain's System X, are simply specialised computers which switch traffic through electronic circuits and are themselves controlled by computerised instructions stored in electronic memories.

## Performance

The process also works the other way. The introduction of digital communications systems makes it practical to link together in networks computers which previously operated as self-contained units. The performance of a single computer can thereby be greatly expanded.

The practical implications of this convergence of computers, communications and office equipment around a common electronic core are far-reaching. Rigid constraints previously imposed by time and distance are falling into insignificance as it becomes possible to process information rapidly and transmit it instantaneously to any destination.

Moreover, machines which were previously designed to perform only one task can now perform several. Copiers, as well as duplicating sheets of paper, can reproduce diagrams or text stored in their electronic memories and send them over the telephone line to other

machines. A personal computer used as a word-processor can be re-programmed in seconds to do financial modelling.

The past year has seen the commercial introduction of a number of still more ingenious products and systems. Xerox of the U.S. has launched an advanced "professional workstation," known as the Star, which not only has great processing power but can also be manipulated almost as easily as a pencil and paper to compose text and prepare high-quality graphics on a display screen.

It belongs to the same philosophy which has inspired another Xerox development, Ethernet. This is a so-called local area network—a length of coaxial cable to which different pieces of electronic equipment can be attached.

The network provides a high-speed communications channel, carrying information between a number of terminals in the same office.

In the U.S. a joint venture between International Business Machines, Comsat and the Aetna insurance group has begun operating a service which uses satellites to transmit thousands of telephone calls and vast amounts of computer data between rooftop aerials which can be installed almost anywhere in the country.

Operated by Satellite Business Systems, the service enables information to be conveyed at speeds far higher than



Among the new products being launched at the International Business Exhibition is the Kalamazoo K-1500 microcomputer, designed and manufactured at Northfield, Birmingham. A support specialist, above, trains an operator to set up the system which has a wide range of accounting applications. Kalamazoo is "jubilant" over the large number of pre-launch inquiries for the system.

is possible through the conventional telephone network. It can be used, for example, by a manager in Houston to gain instantaneous access to a computer in New York, or it can provide a televised conference link between businessmen in Los Angeles and Chicago.

Several companies, including IBM and Delphi, an Exxon subsidiary, have developed powerful systems which can store voice messages electronically and reproduce them in life-like tones on command. One of their uses is to record telephone calls made overnight or to a subscriber who is temporarily absent.

They can also transmit "voice notes," spoken commentaries which highlight a particular

point in a message sent electronically to an executive's personal terminal. Developments such as these can easily give rise to visions of the all-electronic "office of the future," in which paper as a means of communicating and storing information is abolished and managers use personal terminals to perform most of their executive tasks.

This vision is actively encouraged by the many manufacturers and suppliers who compete to offer techniques and equipment for assembling "integrated information systems" or "electronic offices." But the electronic office is—at least in the terms in which it is often enthusiastically described—still closer to concept

CONTENTS			
The bigger computers	II	Britain	XIV
Smaller computers	III	Japan	XIV
Reprographics	III	France	XV
Word processors	IV	Germany	XV
Terminals	IV	Software suppliers	XVI
Information storage	V	Marketing	XVI
PABXs	V	Vending equipment	XVI
Local networks	VI	Dictation machines	XVIII
Mobile communications	VI	Commercial buildings	XVIII
Service bureaux	VII	Staff relations	XIX
Communication systems	VII	Furniture trends	XX
The users	XIII		

CONTINUED ON NEXT PAGE

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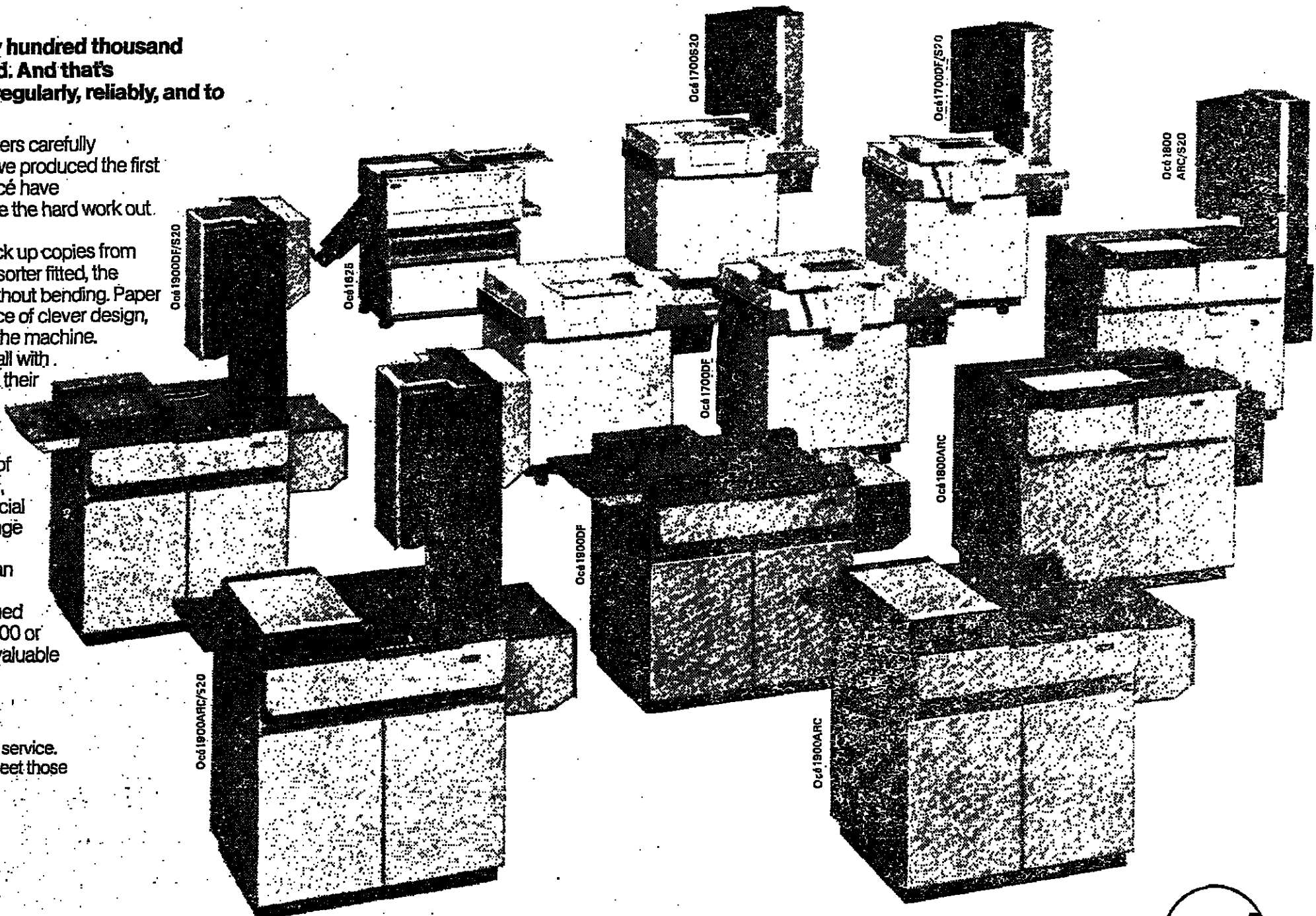
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## OFFICE EQUIPMENT II

## Systems to handle the spoken word

INTERNATIONAL BUSINESS MACHINES (IBM), the world's leading manufacturer and supplier of computer systems, and Delphi Corporation, a U.S. manufacturer of large specialised computers, last month made announcements within hours of each other that should have an important influence on the development of electronic office systems.

Both companies announced computer-based systems designed to record, store and forward vocal messages.

The IBM Development, Audio Distribution System (ADS), turns the human voice into binary digits, the universal language of the computer, and records them on magnetic memory discs.

The disc memories are attached to, and controlled by, a microcomputer, the IBM Series 1.

The offering from the Delphi Corporation, an offshoot of Exxon, is already quite well known because of the publicity the company received through its association with Nexos, the State-backed office equipment company.

Its voice store and forward system, announced in San Diego last month but available in Britain through Nexos as soon as it has been "Anglicised," runs on the Delphi Delta computer, one of the world's fastest.

It can handle around 240 million instructions a second; by comparison, the largest commercially available IBM mainframe computer, the 3081, runs at about 10m instructions a second.

The IBM ADS will cost between \$115,000 and \$235,000 for a system accommodating around 1,000 users. The Delphi computer costs around £200,000 in its most basic form, but it can cost up to £1m or more.

Voice store and forward is the next logical step in the development of electronic office systems.

It has been possible for some time now to store and forward data and messages through widely-available data and message switching systems. With the advent of systems like Xerox's Ethernet and the Star work station, diagrams and graphs have been added to the

types of office information which can be created, distributed and stored electronically.

Voice is much more complicated and requires substantially more computing power to handle it. According to Mr. Christopher Ellis, director of strategy at Nexos, the Delphi Delta computer is the first system to bring together the power of a digital private automatic branch exchange and a multiprocessing computer.

IBM and Delphi are by no means the only manufacturers working on the transmission and processing of voice just as it was data. Wang, with its proprietary local area network, Wangnet, and Haseler with its Silk system, are among the early leaders in what is a key area in office automation.

It also illustrates from a novel point of view how the office revolution is influencing the old argument of mainframe computers versus distributed processing on small computers. This turns essentially on the point that computing power used to be costly but is now cheap.

It made sense to install the largest and fastest computer one could afford on the grounds that the cost of computing, per unit of work, was less with a large machine than with a small machine.

The development first of mini-computers and then micro-computers has markedly changed that thinking. Systems designers began to work on putting computing power where it was most needed—on the desk of the manager or executive, rather than in the computer centre.

Most of the devices needed in the office—executive computers, word processors, electronic memories and facsimile machines—fitted the mini-micro pattern better than the mainframe.

But the old ways took time to change. The earliest word-processors were shared logic machines, devices where a

number of cathode tube screens and keyboards were linked to a single central processor and a single print station.

Now the trend is towards shared resource systems, where a number of work-stations, each with its own powerful micro-processor to carry out tasks such as running word-process-

BIGGER COMPUTERS  
ALAN CANE

ing programs, are linked together and to an electronic memory and a printer.

The work-stations are relatively inexpensive, while the memory and printer are still high capital cost items.

Where does this leave the conventional large computer? In IBM's view, at least, it is still an essential part of office systems planning—at least for those companies big enough to have their own mainframe already.

IBM argues that the important elements of office automation are the capture, distribution and retrieval of information. Capture is the responsibility of the intelligent terminal. Those associated with the IBM 8100 information processing system, for example, carry out data capture.

But, IBM argues, if documents created on one of these terminals are to be distributed from one place to another there has to be a central directory—one which indicates where people, rather than devices, are located.

IBM says this differentiates its approach from that of Xerox with its Ethernet local area network system, where a directory resides in one of the devices attached to the network which knows where all the individual devices are located.

The index for information filing and retrieval is best stored

on a mainframe, in IBM's view. It points out that the kind of data storage envisaged for the office of the future is very large indeed, perhaps three or four times as large as the largest data bases now in operation. This requires massive amounts of disc storage, and economies of scale mean it is cheaper to run a massive hierarchical disc storage on a mainframe.

IBM's 8100 Information System and its Displaywriter word-processing system are designed to stand alone or to run on the back of a host mainframe. The Delphi Delta also functions as a central control point but in a rather different fashion.

The Delta is not a single monolithic computer in the style of an IBM 370/158 but a combination of microcomputers all working together to give the system its impressive performance.

To manage the network Delphi had to devise a machine which could support a lot of disc storage (just as IBM argued) and provide massive processing capacity and high bandwidth to accept lots of messages received simultaneously.

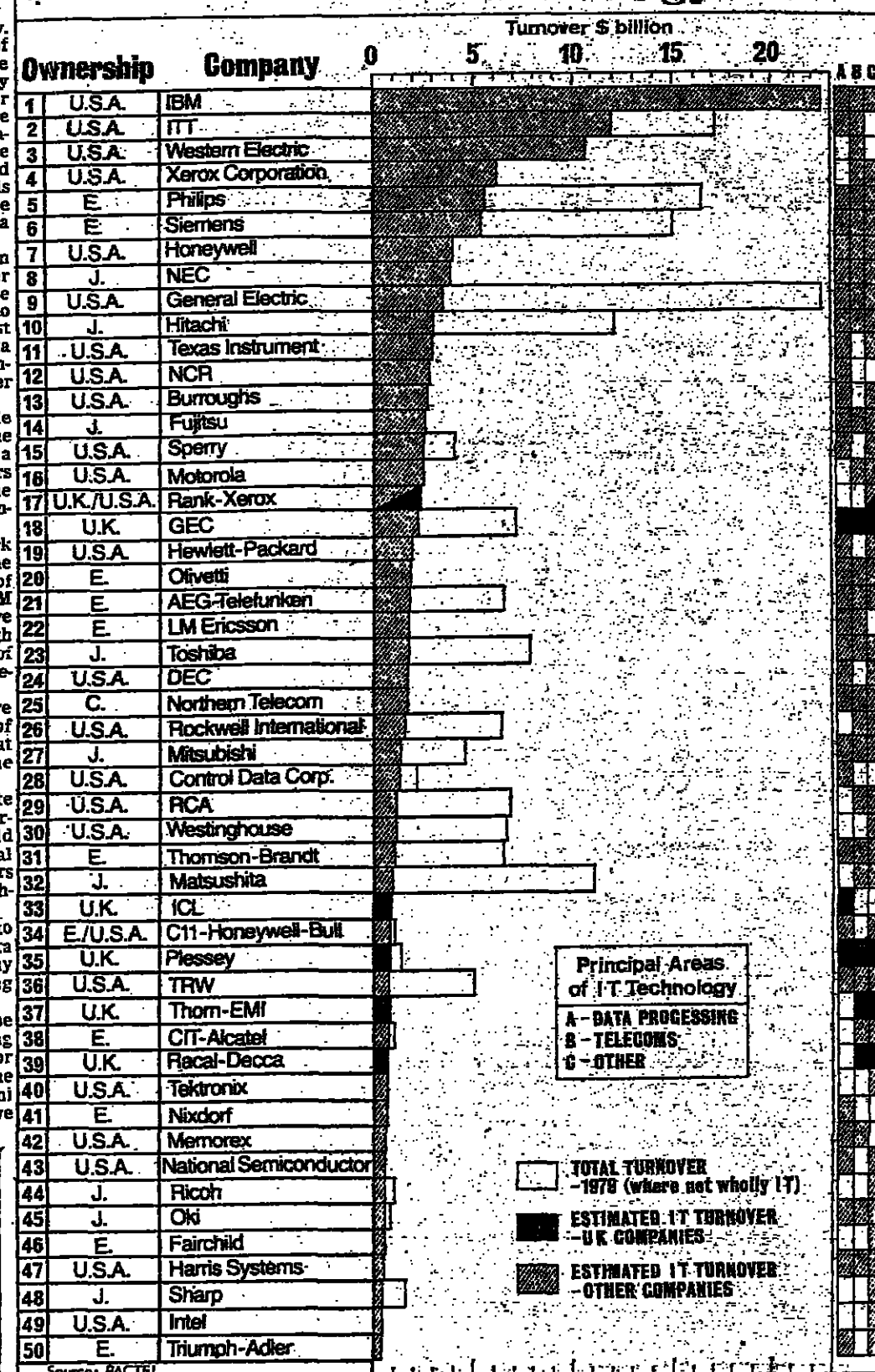
But it was not simply a desire to work on the far frontiers of data processing technology that provided the impetus for the Delta system.

The objective was to automate so much of the human operator's work that he or she would be free to provide the essential "hand-holding" for subscribers that fully automated switchboard machines cannot.

Mainframes can be used to run the data base for viewdata applications, where a company sets up its own system running on its own in-house computer.

The conclusion seems to be that, just as in data-processing itself, there will be a place for computers of all sizes in the office of the future. The mini and micromakers will not have it all their own way.

## The world's 50 top companies in information technology



## Era of rapid change

CONTINUED FROM PREVIOUS PAGE

than to reality.

The necessary technology is available to create a working version of it; but the technology does not guarantee the ability to convert it into readily marketable products that meet real needs. That lesson has been emphasised by the disappointing results of British Telecom's attempts to build up a mass market for Prestel, its viewdata information service.

There is also a danger that ingenious equipment for processing information will be viewed as an end in itself rather than as a tool. The value of any tool lies in its ability to do a job and the proficiency of the person using it.

But it is tempting for engineers to become carried away by the cleverness of their designs and to forget that the resulting product will often have to be operated by people with little technical skill or inclination.

There is no shortage of studies pointing to the potential gains in productivity through office automation; but the reliable evidence available so far suggests that maximising

these gains requires careful planning, organisation and management.

Research by Unilever International Management Consultants suggests that the successful introduction of word-processing not only permits but requires important changes in staff organisation. It has found that some companies can improve efficiency at least as much by grouping typists into pools and ensuring that they receive an orderly flow of work by installing electronic text processing equipment.

Improvements in productivity have been found to vary widely according to the type of work. They are, not surprisingly, highest for repetitive tasks like preparing reports and smallest for one-off jobs like composing individual letters.

Moreover, no amount of automation can increase the productivity of a secretary who is merely sitting at her desk waiting for work.

Some early studies on office automation tended to treat information almost as an abstract quantity and to lump all offices together in the same category. Yet common sense would suggest that the organiza-

tion and functions of, say, a branch of an international bank differ widely from those of a retail store, a factory or an airline office.

Equally, the solutions found to be most cost-effective in a big company may not suit a small concern. While a big company may well benefit from an advanced electronic mailing system, a small one may find that its needs are met just as well by a teletypewriter designed to store and forward Telex messages automatically.

There is little doubt that advances in office automation will have important, though still largely impalpable, long-term consequences for individual jobs, working practices and employment levels as well as on all-round business efficiency.

Much remains to be learned about the optimum application of the new technology, however. The tentative conclusion is that it will be an incremental process, that different organisations will require different approaches, and that their results will depend at least as much on management skill and an appreciation of employees' psychology as on the technical factors involved.

## What's the greatest leap forward in typewriters since they went electric?



1941

A typical example of a machine in use during the 40s. The basic design hadn't changed much since mass production began in the early 1900s.

1961

Although based on a 19th century mechanical principle, the introduction of a spherical typing element (golfball) in the early 60s machines marked a major advance for electric typewriters.

1981

The AES Alphaplus. The high performance typewriter with a built-in screen and printer. It can do more than one job at once, typing and editing a document, whilst at the same time printing another at over 300 words per minute.

AES Alphaplus.  
The typewriter with a screen, printer and filing system.

It's the typewriter that makes all other typewriters obsolete. The typewriter that's so simple, even a two-finger typist can use it. Yet it's so sophisticated, it shows what's being typed on a screen before a word has been committed to paper. If your secretary is happy with the look of it, fine. If not, she just presses a button and simply alters the bits she doesn't like, without needing to retype the whole thing. She can also make as many originals as she likes without

leaving the room, the phone, and you, unattended. It's the typewriter that keeps a record of everything that's typed, improving efficiency to a remarkable degree. And it's so easy to use, anyone who can type at all can type on this.

It can also be used for more sophisticated tasks as required. For example, AES Alphaplus is compatible with a wide range of other AES screen typing systems, which means it can communicate with them in offices around the world. It does a lot more than other machines, yet only costs a little more than the best electronic memory typewriters.

If you're thinking of updating your current typewriters consider investing in an AES Alphaplus. It's the greatest leap forward since typewriters went electric.

I need a Friendly Type around the office. Please send me details of the full range of AES Word Processors. Post to: AES Data (UK) Ltd, 170 Windmill Road, Sunbury-on-Thames, Middx, TW16 7HL FT/AL/1

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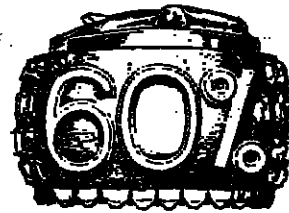
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**GNT TELEXMASTER**



# Rush of new products to cash in on booming market

FEW PRODUCTS born of the revolution in microelectronic technology have enjoyed quicker public acceptance or a more explosive growth rate than small computers.

Almost every week, it seems, brings news that a new machine has been introduced or a new company formed to cash in on the burgeoning market.

Creative Strategies International, of San Jose, California, a market research house, estimates that world shipments of small business computers will rise by 30 per cent this year to almost 100,000 units worth more than \$500 million.

Moreover, CSI points out: "The industry has barely scratched the surface of the enormous potential market." It forecasts that the annual growth of shipments will comfortably exceed 30 per cent between now and 1985, when it expects some 350,000 machines worth more than \$1 billion to be produced.

The industry is developing so fast that it is almost impossible to offer any clear definition of a small computer. Driven by the relentless fall in the price of electronic components, mass-production techniques and fierce

competition between suppliers, the amount of computer power available for a given sum of money is doubling about every three years.

CSI's survey covers business computers ranging in price from less than \$5,000 up to \$100,000. But it excludes many types of specialised machines intended primarily for scientific or technical applications rather than for general business use.

This distinction is itself slightly artificial, for the kind of application to which a small computer is put often depends more on the software (programming) available for it and the marketing approach chosen by the supplier than on the machine's external appearance or the arrangement of the microchips inside it.

Small computers grew out of accounting and calculating machines. Manufacturers like Burroughs, NCR and Olivetti, which had for decades been making mechanical products, realised towards the end of the 1960s that the same functions could be performed more efficiently and reliably with electronic circuits than with gears, wheels and levers.

These manufacturers continued to sell their new pro-

ducts through the same types of channels—mainly dealerships and direct sales—as before. But as low-cost electronic components became more widely available, the business machine manufacturers found themselves facing competition from newer rivals using different types of distribution technique.

One of these was the OEM (Original Equipment Manufacturer) method, favoured by mini-computer manufacturers like Digital Equipment and Data General. An OEM buys bare computers, fits them up with software and peripherals like printers, keyboards, storage devices and terminals and resells them as complete systems.

In the mid-1970s a new type of manufacturer started to emerge. Young companies like Apple and Commodore launched low-cost "personal" computers small enough to sit on a desk top. Though most of the machines have been bought for business use, many have been sold through retail stores, particularly in the U.S.

International Business Machines, which recently launched its first personal

computer, is to break with tradition by selling it through retail outlets. Other companies, including Xerox and Digital Equipment, have also recognised that this is too important a sales channel to be neglected and are setting up their own store chains.

What does the purchaser of a small business computer get for his money? At the most basic level he can expect a machine on which he can operate a standard, pre-written software package designed to carry out accounting tasks like a general ledger, payrolls, sales-order processing, inventories and accounts payable and receivable.

More advanced packages are available for purposes like financial modelling. These can calculate interest charges or debt repayment schedules, do forecasting and even convert a series of figures entered on the keyboard into bar charts or graphs which take shape on the cathode ray screen. A variety of word-processing packages is also available.

Most small business computers in use today are operated as self-contained systems. A personal computer will, typically, be operated by only one user,

while a more expensive system will be able to accommodate a number of terminals. It will also offer greater processing power, higher speed and bigger data storage capacity.

But the era of the communicating small computer is fast approaching. A number of big companies are now considering equipping managers and profes-

Once the computation is completed, the results can be flashed back to the computer station which requested them.

Another benefit of networking is services such as electronic mail. Several big companies already have such services in operation. They enable managers to communicate swiftly by typing into their computers messages which are then relayed through the network to the appropriate terminal.

## SMALL COMPUTERS

GUY DE JONQUIERES

sional staff with desk-top machines linked together in a network, enabling data to be shuttled about at high speeds.

Networking increases the power and versatility of small computers by permitting tasks to be parcelled out between several different machines. It is technically possible to connect such networks to bigger mainframe computers, which can be called into service for computations which require large amounts of processing power.

New methods are also being devised to operate small computers. Hitherto, mastery of a keyboard has been essential for anyone wanting to carry out even the most simple data-processing tasks. But graphics design on the Perg is made easier by an electronic pen: when moved around on a special tablet it activates a pointer on the screen.

Xerox's new Star workstation employs a rolling hand-held module to do the same thing.

Experiments are also being carried out with touch-sensitive screens which instruct personal computers to carry out specified functions when the user applies a finger to the appropriate section of the display.

Further ahead lies the promise of computers which will respond to human speech and reply in life-like tones, using special electronic circuitry.

Some computer speech devices are already on the market. Though they are still fairly rudimentary, they seem certain to benefit from further development which will make them cleverer and more versatile. In time they are

likely to bring computers within reach of a still wider public, which, in turn, will find still more applications for them.

With prices of small computers falling steadily, the main factor governing their future growth is likely to be the availability of suitable software. Few users will in future want to write their own—a difficult task with many pitfalls—and most will want to buy in programmes.

Good standard packages for performing commonly-used accounting and financial functions are now available for small computers. But as new users become familiar with data-processing, they will demand increasingly advanced and more complex programmes designed to meet their particular needs.

At present, however, there is a world shortage of suitable programmers, which seems likely to continue for some years to come. For the small computer industry the challenge of the 1980s is likely to be to satisfy the demand created by its spectacular success in popularising computing during the 1970s.

## More and cheaper models in bewildering array

WITH PRICES still falling and more companies offering more new products with more facilities, the onward march of the photocopier industry continues through modern offices even if it sometimes bewilders the staff.

According to a survey conducted earlier this year there are now well over 100 different models of plain paper copier available in the UK, some 26 more than were on sale last year. To add to the confusion, a number of machines appear in a variety of guises.

Since Xerox lost its monopoly in plain paper copiers, the Japanese manufacturers have taken an increasingly large share of this growing market which seems to suffer little from the recession. According to brokers Scott Giff Hancock, the leading analysts of this industry, of a total of 1.2m plain paper copiers produced world-wide last year, some 900,000 were made in Japan.

Xerox still dominates the market in large high-speed copying systems and has begun fighting back at the medium and

lower end, somewhat slowing the rate of Japanese advance.

The reprographics industry can be divided into five distinct groups. At the top end of the scale are the offset duplicators, with a high capital cost but providing good reproduction and low cost per copy on long runs.

To some extent it is being eroded by the top end of the next category, high-speed plain paper copiers made mainly by Xerox or Rank Xerox in most countries outside North America and Fuji Xerox in Japan.

The third group—and the ground where most companies are battling it out—is in the low and medium speed plain paper copier. Prices in this group have fallen so far that at the bottom of the range they are now competing with the fourth area—coated paper copiers.

Coated paper copiers which used to be considerably cheaper to buy, or lease, have a higher cost per copy and

produce copies which are less clear.

Lastly, there is the stencil duplicator defending its now rather small patch against the overwhelming tide of photocopyers. If its price advantage

end of the range they are now going up market.

Canon has produced a machine claimed to be capable of making 135 copies a minute. This is faster than the top Xerox machine, although it has fewer facilities.

Measured by units, the largest manufacturer of copiers is Ricoh, little-known outside Japan while Xerox has, by a long way, the highest revenues. In the U.S. Ricoh copiers are sold by Savin and in Europe by the U.S. owned company Nashua and also by Kalle Infotec, a subsidiary of Hoechst.

Ricoh has begun selling copiers under its own name but has been moving carefully as it sets up distribution and servicing facilities in each country. The copiers sold by Ricoh, under its own name, use a dry toner as opposed to the liquid toner used in the copiers sold under the Savin and Kalle labels.

Dry toner is generally seen as having a better long-term

future than liquid toner. Ricoh has also announced that its agreement with its three suppliers will end in 1983, although Kalle Infotec will probably continue to supply Ricoh copiers. Nashua and Savin, both trying to manufacture their own copiers, are reported to have had problems.

According to Scott Giff Hancock, Japanese companies had 26.2 per cent of the world market in 1980 compared with just under 9 per cent five years earlier. In 1980 the three Xerox companies held 55.7 per cent against 73.7 per cent in 1975.

After Canon and Ricoh the main Japanese manufacturers are Minolta, Konishiroku which is sold as U-Bix, Sharp and Toshiba. Mita, another Japanese company sells its products under a variety of names including Olivetti, Gestetner and Imperial.

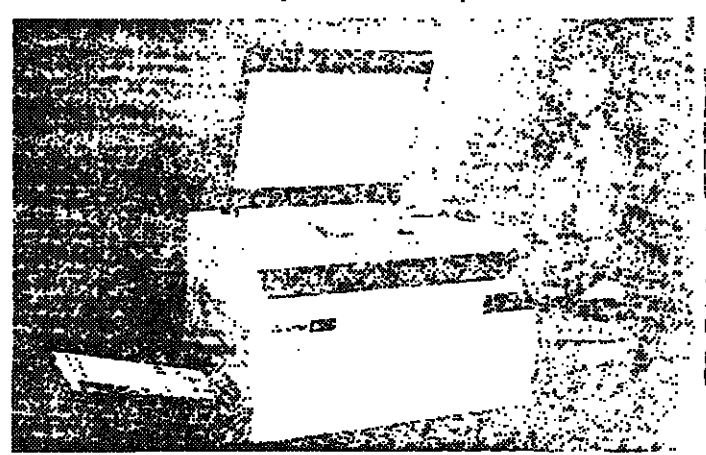
The only British company manufacturing copiers is Gestetner. (Rank Xerox simply reconditions copiers within the UK).

Gestetner, still with a substantial part of its sales in the less-than-flourishing stencil duplicator business, sells plain paper copiers made by Rex Rotary, its Danish subsidiary which it acquired in 1976.

Critics point out that Gestetner has been slow to introduce new products, particularly plain paper copiers, which represent the major growth area in the reprographic business. But the company is expected to achieve a reasonable growth because of its extensive sales organisation.

Gestetner is likely to have its margins squeezed as it competes directly with the Japanese. It also makes selenium drums, the heart of a copier, in Surrey for other copier manufacturers.

One effect of the falling cost of copiers has been to oblige companies to revise their marketing methods. Copiers which the future probably sold by an expensive salesman with a company car no longer have sufficient margins to support the salesman.



The new Gestetner 2003. A3 copier

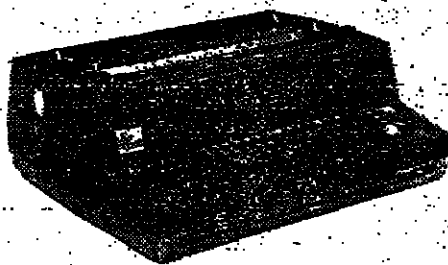
Also, as the market grows, more and more small businesses are purchasing or leasing photocopyers, which involves more selling effort than getting bulk orders from a large company's central purchasing department.

A number of companies—not least Xerox—have had to resort to a wide variety of new selling techniques from setting up retail stores to telephone selling. The battle between Xerox and the Japanese is expected

to remain fierce over the next few years. While the Japanese are moving more and more towards Xerox's ground at the top end of the range, which it dominates, Xerox has moved towards smaller machines and adopted aggressive selling methods.

The two factors are expected to slow but not stop the inroads by Japanese manufacturers, which will have to provide more and better servicing for their more advanced machines.

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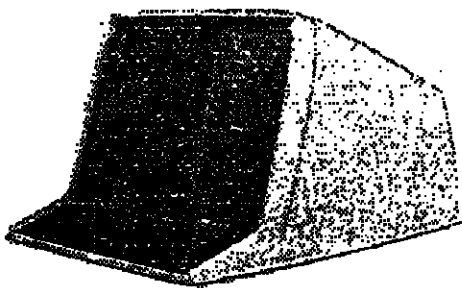
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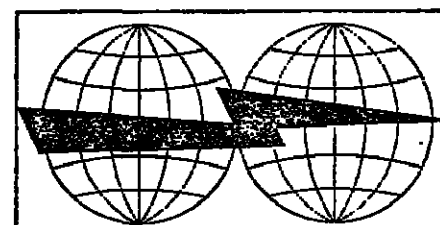
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**EXXON** OFFICE SYSTEMS



## OFFICE EQUIPMENT IV

## Future lies with screen-based systems

IF THERE is one common denominator in the reports of progress in office automation appearing over the past couple of years it is that, faced with the all-electronic future or something closer to home, most organisations and individuals opt for the costlier alternative.

Word processing machines are, without question, the principal devices through which people become acquainted with the theory and practice of the electronic office, yet in the UK only some 30,000 stand-alone or shared-logic word processors have been yet installed, compared with a secretarial workforce of about 800,000.

As the Financial Times word processing survey indicated in June this year, major buying interest has not been in screen-based systems but in electronic typewriters, machines which substitute electronics for electromechanical components and are therefore cheaper and easier to manufacture while having a range of capabilities usually associated with computer-based word processors.

Industry observers believe, however, that these "intelligent" typewriters will have but a short reign. The future lies with screen-based systems, not only because of their intrinsically greater power but because of their basic role as work-horses in office message systems.

But office managers' reluctance to move on too quickly from something they know and understand explains many of the variations on the word processing theme available today.

There are over 100 different models of word processor on the market, excluding word processing packages such as

"Wordstar" designed to run on microcomputers or manufacturer's software which enables terminals attached to their mainframes to carry out word processing tasks.

They are all early examples of "application computers," general-purpose computers redesigned to carry out a specific function with maximum efficiency.

The early shared logic systems—where a number of work stations shared the power of a single central processor—have fallen into disfavour as the cost of computing power has declined.

Stand alone systems, with their own in-board microcomputer, are in fashion now, complete with hardware and software to enable them to communicate with other word processors.

All the reputable manufacturers produce machines which will do the job adequately. The advantages claimed by a manufacturer for his own particular variation on the basic theme may be more imagined than real, although as with any product for personal use, it is horses for courses.

Afficionados of the word processor market look for key-boards which have been designed for the typist—a data processing terminal running a word processing package will probably not prove satisfactory to an experienced typist.

The keyboard should be independent of the screen for maximum working comfort and the screen itself should display characters in a rock-steady fashion. A flickering screen which reflects the light is probably the quickest way to engender eye-strain, headaches and

antipathy among typists. Incidentally, while the last word on the subject has probably not been said, enough research has now been carried out to suggest that visual display terminals do not, of themselves, cause eyestrain or other debility.

If a typist has an unsuspected eye defect, however, this could be exacerbated by working in front of a VDU. More commonly, discomfort caused by an ill-adjusted chair or poor light-

## WORD PROCESSORS

ALAN CANE

ing is projected by the unhappy typist onto the word processor.

Ideally, the system should display a format line at the top of the screen with details of document name, page and other housekeeping details such as the amount of memory remaining.

It should be possible to edit text easily on the screen—correct spellings, insert new material and delete old, add or subtract paragraphs, justify margins and so on—the user may want such novel utilities as the ability to highlight certain words or sentences or to reverse the shading of background and text.

Scrolling text upwards and downwards and horizontally on the screen is useful if a long document is being prepared—a refinement is the ability to see the bottom line of the preceding page and the top line of the following page on the screen at the same time.

The cursor—an electronic pointer used to delimit blocks of text, indicate individual letters and so on—is usually controlled by a block of keys. The most sophisticated systems incorporate a "mouse," a palm-sized gadget which lies on the desk top, tethered to the machine by a flexible cable. Movement of the mouse on the table-top is reflected in the movement of the cursor on the screen.

The mouse is featured on the Xerox "Star" workstation, a device which bears as much resemblance to an ordinary word processor as an IBM mainframe bears to a pocket calculator.

Not all word processors have full or even half page displays. Many have simply a single line display, reckoned to be the best for fast, easy input.

A machine which aims to achieve the best of both worlds is the Dictaphone Dual Display, which sports both a 66-line full-page display combined with a single line, 37-character display, set just above the keyboard.

AES, now operating independently of its erstwhile stablemate Wordplex, seems to have taken the job of bridging the gap between electronic typewriter and word processor most seriously. Its latest offering, the AES 2200, Data Recall makes the Diamond V, an expensive but impressive machine. Computer Ancillaries (CAL) sells a machine based on a microcomputer device devised by the UK company LSI Logic. Monotype offers its own range

that the machine is a conventional typewriter.

British Olivetti, with its Electronic Typing System 1019 has taken a different tack. It reasoned that with a user-base of more than 10,000 electronic typewriters in the UK, there would be substantial demand for a device to enhance those machines, converting them into instant screen-based word processors.

The device was a 25-line screen, floppy discs and software from Syntex, a U.S. company with which Olivetti is involved. It adds on to standard Olivetti ET201 or 221 electronic typewriters.

The market, in fact, is split between companies which are basically electronic equipment manufacturers—AES, Wordplex or AM Jaquard, for example, and those which are basically office equipment specialists—Dictaphone, Rank Xerox.

Electronic typewriters are becoming more sophisticated; word processors are becoming cheaper. Companies such as IBM and Olivetti, with a foot in both camps, provide ranges of equipment across the board.

The UK presence is small but distinctive. It includes Logica VTS which designed and builds the machines now marketed as the Xerox 2200. Data Recall makes the Diamond V, an expensive but impressive machine. Computer Ancillaries (CAL) sells a machine based on a microcomputer device devised by the UK company LSI Logic. Monotype offers its own range

## INFORMATION TECHNOLOGY

Market summary of worldwide annual shipments (constant 1980 prices)



The six sectors	£bn per annum		Average annual growth rate %
	1980	1985	
Computer equipment	21.1	62.0	14.8
Computer services	8.5	17.5	15.2
Word processing	1.0	4.3	34.7
Business communications	1.3	5.4	19.0
Data transmission equipment	0.6	1.2	14.8
Public network equipment	0.9	1.5	7.9
Total	54.4	104.7	14.9

Source: PACE

of word processors.

Among British suppliers of word processing packages are Systime with Systext, running on Digital Equipment-based hardware, Arbut with Reform, and ICL with its 7700 system running on its mainframe computers.

The principal names in the market place, however, are

North American—AES, Wordplex, IBM, Xerox and Wang, the fast-growing U.S. company which started in word processing and is moving rapidly into electronic office systems.

On one view of the future, word processors as we know them today—application machines, expensive and limited—will become obsolete,

replaced by multifunction workstations which will combine the simple typing function with communications, video, voice transmission and fast editing. That is where those major names are going. There again, the preference for the familiar may guarantee the humble word processor a secure place in the office of the future.

## Expanding range of capabilities



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Lightning Records are one of the largest record wholesalers in the UK. Together with sister company Juke Box Services they employ 60 people and have a multi-million turnover. Competition is fierce and it was clear that manual systems could not cope with increasing volumes and help Lightning to maintain a competitive edge.

Recently, a Series 16, Datasab's real-time minicomputer system was installed, and it all started to happen for Lightning Records. Phil Middle, Credit and Computer Manager, explains:

"We have developed an absolute real-time system, which uses the excellent capabilities of the Series 16 to the highest degree. Certainly, no other manufacturer's equipment, which we looked at, could cope with the flexibility and response times, so cost effectively—if they were able to do the job at all.

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THE PICTURE editor of this newspaper is a standing joke with the editor of its technology page. "What picture," he asks resignedly every morning "have you brought me to process today of somebody working at a visual display terminal?"

It is only a slight exaggeration. Microelectronics and computing are the technologies which make news today, and their most obvious characteristic is the interactive terminal—a television-like screen and a keyboard which makes it possible to send messages and receive messages from the computer.

Terminals used to be no more than their name implies, devices at the end of a ribbon cable or telephone line which could be used to put in data to a mainframe computer or retrieve it.

The advent of the eight and 16 bit microprocessors changed the way computer specialists thought about terminals.

Now they are classified as dumb, smart or intelligent according to their degree of local processing capability.

A dumb terminal can act as an input and output device, but has no local processing capability.

A smart terminal, on the other hand, is capable of processing without using the power of the computer to which it is connected. The user is able to programme the terminal to suit his or her own needs. It is sometimes difficult to distinguish between a smart terminal and an intelligent version—it really comes down to the degree of local processing power.

Next up the line is the front end processor, usually a mini-computer, used to organise and preprocess data for a much more powerful mainframe.

But these definitions belong to the world of data processing. What office automation specialists are looking for are terminals which can be used easily and effectively by people with no computing experience—and which hide the fact that they are computers at all.

Such devices are described as "user friendly" technology is said to be "invisible to the

user" in the jargon of the business.

One notion is that the terminal, or workstation—which is becoming the preferred description in the office world—should integrate and replace most or all of the separate utilities now found in conventional offices.

So, for example, it has been suggested that the desk and all its contents could be replaced by an image on a screen, of a desk and its contents.

The first commercial realisation of this notion came earlier this year when Rank Xerox launched its Star Information Processing System.

The Star—to be known as the 8010 workstation in the UK—has been given widespread publicity (FT, April 29 1981) but it is a genuine technological milestone both in its capabilities and in the conceptual thinking and research which gave rise to it.

Xerox started with the idea that the terminal of the future would be small—about the size of a paperback book—portable and easy to use.

When it started research on this idea at the end of the 1960s, the technology was simply not there to support such a concept (this was before the first four-bit microprocessor chip, remember).

In consequence, it built the Star's predecessor, the Alto, using 1970s technology. So the Star is a fairly bulky piece of equipment, featuring an A4

## TERMINALS

ALAN CANE

sized screen and memory discs in a disk drive under the desk top.

But the Star takes "user friendliness" a long way; the user need not type; there is a "mouse," a small box attached to the workstation by a wire which can be moved around the desktop. The movement of the mouse is mirrored on the screen and it can be used as a pointer, as a cursor or as a device for creating diagrams.

The Star does not give a pictorial image of the desk, but it provides tiny formalised images on the screen such as in and out trays, desk drawers, files and folders which can be "opened" and examined by pointing at them with the mouse.

If a visual display screen is to replace the conventional tools of the working office—files, notepads, records and memo—quality will be important.

In the Alto experimental system, Xerox engineers created a screen so detailed that given sufficient patience and artistic ability it would be possible to create a perfect half-tone image of photographic quality, point-by-point.

Ironically, now that Xerox has launched the fruits of its research, technology has caught up with its original concept. Tiny but powerful computers have been available for some years. Last month DWV Microelectronics launched the Husky 144, a portable computer about the size of a book and rugged enough for use in the field.

According to the manufacturer it is the first, portable computer to offer the features found in desk top systems. It provides a screen displaying up to 128 characters in four lines. Communication with the device is carried out in what the makers like to describe as "plain English."

If runs the simple and power-

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# The ultimate in telephonic one-upmanship

WHILE many companies still use switchboards with manual exchanges, with their operators moving plugs around a board to connect callers, an enterprising Canadian company has produced what might seem to be the ultimate in telephonic one-upmanship—a PABX for the home.

Purists might balk at calling it a private automatic branch exchange (PABX), since it only has one incoming line but through up to five extensions. Yet it can be used as an intercom with any extension dialling another. It can be used for paging people throughout the house, for door-answering, as a baby monitor, for speed dialling or for repeat dialling—or it will play pop or a Bach fugue for a caller who has been put on "hold."

Mitel, the Canadian concern, which has produced this home communications system, is a good example of how advances in micro-electronics have revolutionised telecommunications. Most private automatic branch exchanges in Britain and elsewhere use out-dated electro-mechanical technology which requires labour-intensive production methods. The new electronic exchanges require far fewer people to assemble them and also benefit from the falling cost of micro-electronics as the micro-chip performs more and more functions.

Telecommunications is one of the semiconductor industry's major markets, and as the cost of microelectronic production falls new PABXs will offer more and more complex functions at a lower cost.

Since the mid-1970s the Post Office has slowly been allowing companies to offer large electronic PABXs directly to customers. Until the passing of the British Telecommunications Act this year, British Telecom was the newly-independent telecommunications branch of the Post Office and had a monopoly to supply all PABXs with fewer than 100 lines, which is most of them.

Since the Act was passed the Department of Industry has the power to license other companies to sell small exchanges as well as the large ones, but it will not do so for a further two years so as to give UK manufacturers time to prepare themselves for the inevitable foreign competition—particularly from U.S. companies and probably from the Japanese.

It is seeking a reciprocal openness of markets from foreign suppliers with which the U.S. will easily conform while Japan will not. Critics of the British telecommunications industry point out that it is significant that all the large electronic PABXs available in Britain have been developed overseas and are

mainly offered by foreign-owned companies. The first-ever approved was made by International Business Machines (IBM).

## PABXs

JASON CRISP

Other foreign-owned companies with large electronic exchanges which have been approved by British Telecom are TMC, a subsidiary of Philips, Standard Telephones and Cables, a subsidiary of International Telephones and Telegraph (ITT), and Thorn-Ericsson, a joint venture between the British Thorn-EMI and LM Ericsson, the Swedish telecommunications company.

The two British-owned telecommunications manufacturers have both turned to North America for large electronic PABX systems. The General Electric Company (GEC) sells an exchange (SL-1) based on a design by the Canadian company Northern Telecom.

Plessey has had success with an electronic digital exchange based on one designed by Polm, a company which first developed rugged computers for military use.

British Telecom recently introduced three new small electronic exchanges, after strong criticism from customers who were upset both by the antiquated design and shortage of "conventional" PABXs with electro-mechanical systems.

The first, known as Monarch, is an advanced digital exchange capable of rapidly switching data and voice. It was designed by British Telecom itself at its research laboratories at Martlesham, near Ipswich. Monarch was put into production by both Plessey and GEC and is rapidly becoming widely available throughout the UK.

Waiting times for PABXs—which exceeded a year in 1980—have been substantially cut. Monarch has been criticised, as have many other designs for the Post Office, for being over-engineered, however.

With anything between 24 and 120 extensions, Monarch can have up to 30 exchange lines. It has all the facilities which are more or less standard in any modern exchange, such as call-transferring, directory dialling, repeating the last number called, and conferencing.

Herald, a smaller exchange developed by Plessey TMC, the Philips subsidiary, can be as small as two-line with four extensions up to 10 exchange lines and 36 extensions. It is also

available from British Telecom. Although it is made mainly by TMC, Standard Telephones and Cables (STC) also has a small contract to manufacture it.

Much to the consternation of the traditional British manufacturers, GEC, Plessey and STC as well as Thorn-Ericsson, Philips, and others, British Telecom has just begun selling a third small exchange made by the Canadian company Mitel.

The traditional manufacturers claim, with some justification, that British Telecom's design standards have always been so high—that is, over-engineered—that they have never had the option of producing a low-cost product like Mitel's.

But because British Telecom now faces competition it has bent over backwards to accommodate Mitel's design standards, they argue.

Last year the pressure on British Telecom to find a further source of PABXs increased as waiting times for any exchange grew and grew and the introduction of Monarch and Herald was delayed. At the time companies installing advanced computer communications equipment often found that they still had to use old manual exchanges for the telephone system.

The Mitel exchange, although offering a wide range of facilities, is not as advanced as

Monarch. For instance, it is an analogue exchange rather than digital. Its contract with British Telecom prevents it from offering the exchange to companies when the UK telecommunications market has been completely liberalised.

With telecommunications and computer technologies converging as a result of the revolution in micro-electronic technology, the PABX is expected to become an increasingly important piece of office equipment.

As telecommunications companies try increasingly to diversify into "office automation" products so they are expected to face competition from new sources—including the computer manufacturers with their experience in data networks.

Apart from the U.S., Britain is the only large industrialised nation in the West to have set about liberalising its telecommunications market in a way which may allow competition and change in an industry which is being driven ahead by the rapid evolution in technology.

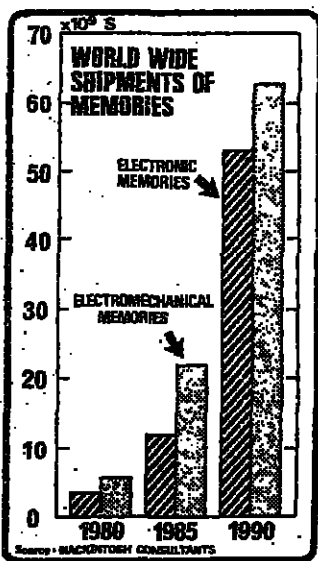
Many observers believe that more conservative attitudes in Continental Europe will be changed inevitably by the technological advance of telecommunications. For most companies the heart of telecommunications is the PABX, which will make its selection an even more important decision.

## Area of vast potential

AS COMPANIES have increased their efforts in the field of office automation a concept has grown up in some areas that this will, one day, result in the paperless office.

While many observers are predicting that much more information will be transmitted electronically within this decade, far fewer are willing to say that the amount of paper which is stored will be much reduced. And there is the view that one of the results of the development of information technology is that more information is produced, which will result in more paper being kept rather than less.

At present the most widespread application of so-called technology in the storage of documents is in micrographs. A report, published at the end of last year by Mackintosh Consultants, concluded that electronic document storage in



tosh Consultants, optical discs will account for 10 per cent of world wide use of electro-mechanical memory systems. By 1990 it predicts optical discs will account for nearly 40 per cent of that market, which it expects will be over 50 times as large as it was in 1980 when optical discs were not generally available.

Magnetic tape, which currently accounts for around 35 per cent of the market, will become increasingly less significant while "rigid" discs continue to dominate.

But while electro-mechanical memories are expected to grow 40-fold over the decade, electronic memory is expected to increase by a factor of 200, measured by the number of memory "bits" shipped.

Over that period, the price per bit of electronic memory will fall by a factor of 15, predicts Mackintosh.

The great majority of electronic memory will remain in silicon chips. Magnetic bubble memories, solid state devices in which data is stored and controlled magnetically, once the great hope of cheap mass memory, now looks set for a more mundane future.

A number of European companies, including Britain's Plessey, withdrew from developing magnetic bubble memories. But the most dramatic signs that its prospect is much less than originally hoped is that U.S. giants Rockwell, Texas Instruments and, very recently, National Semiconductor, have withdrawn from the area as well after massive investments in the product's development.

A number of Japanese companies are still producing magnetic bubble memories. Two U.S. semiconductor manufacturers, Motorola and Intel, also remain committed to these devices which can currently store up to 1m bits—units of information—on the latest designs which are just becoming available.

The only European company still involved in bubble memories is Sagem of France. Mackintosh estimates that although bubble memories will grow it will only represent a very small proportion—about 1 per cent—of the total market for electronic memory.

Electronic Document Storage 1980-1990 and Memories 1980-1985 are available from Mackintosh Consultants, Mackintosh House, Napier Road, Luton.

## INFORMATION STORAGE

JASON CRISP

1983 would be almost entirely micrographic based, with a market in the U.S. of \$75m and in Europe of \$57m. By 1990 it expected those markets to be \$770m and \$570m.

At the end of the decade however it is expected that other systems of storing information—electronically, magnetically or on optical discs like the video disc—will begin to have a significant impact.

As Mackintosh Consultants note, "Electronic document storage will affect the market for paper-based document storage systems only marginally." It also said that small-scale filing systems would barely be affected, that traditional forms of filing (such as in filing cabinets) would still be used in the vast majority of filing applications, but that in large-scale document filing the manufacturers of paper-based systems would suffer some losses.

But it warns, the threat to manufacturers of paper-based systems comes from the replacement of documents by wholly electronic systems, such as electronic invoicing which is already being introduced by large companies.

As the cost of electronic memory continues to fall it will become increasingly attractive to use it to store information. In the late 1980s it is expected that the main competition for micrographic companies—selling microfilm and microfiche systems—will come from the computer manufacturers.

In addition, most manufacturers of all types of electronic office equipment, from word processors to photocopiers, are increasingly looking at producing office systems including memory and storage.

The development of optical discs—the system which Philips uses in its videodisc system—is expected to make it a major competitor of micrographic systems in the latter part of the decade. In addition to low costs it has the additional facility of very fast retrieval.

According to a recently published survey, also by Mack-

"And now, the sad news of the businessman who was so uninformed that when things were low and his company lost dough, he was the first to go... but the last to know."

"To stay in business these days you've got to know where you are. Not like Hugo Broadbeam, who didn't know, made the wrong decision, and went down the drain together with his business. Now, as Hugo happens to be a generously-proportioned 25 stone, he found the experience quite grating."

Anyway, at Commodore they've asked me to mention that their microcomputer, the PET, can give you all kinds of information to keep you on top of things. Like how many beans make five... Knowing what the score is... Even informing your left hand what your right hand's doing—very useful if your secretary starts asking awkward questions.

All the facts at your fingertips, or any other part of your anatomy that you prefer. But now I'll just leave it to the Commodore chaps to explain in their own words.

Making a decision. That's the everyday problem that faces everyone in management, from departmental heads to the person who runs his own business.

The PET can make this very necessary function much simpler by turning up facts and figures you need—in seconds. The areas it can cover include credit management, planning and forecasting, budgetary control, personnel records, sales data and information retrieval.

Another big plus is that, as the PET is much more than a glorified electronic filing system, it'll give you your information in the right form for the job in hand.

Its other talents include handling your accounts and stock control, as well as doubling up as a high quality word processor. There's a vast range of programs which do all these things—and more. Software that can help different kinds of companies process their information in the way that suits them best. Those who know will appreciate what we mean when we mention specially developed software packages like Ozz, Visicalc, DMS, Petaid and Silicon Office.

But if you're not technical, there's no cause for concern, because there are thousands of secretaries and typists who've become expert on the PET after a very short time indeed.

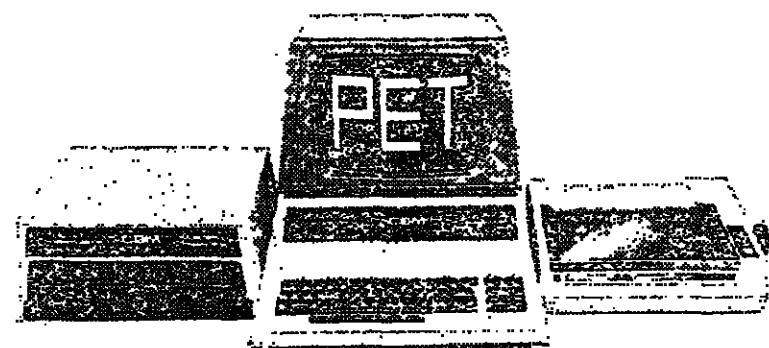
When it comes to reliability, we'd just like to point out that Commodore have been in electronics for over 20 years. And that, apart from the 40,000 PETs in the UK, there are many thousands more helping businesses run profitably throughout the world.

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"After all this talk about decisions, you've obviously decided to send back the coupon and let Commodore tell you a lot more interesting stuff about the PET."

Next time we'll be meeting the man who crossed an artistic computer programmer called Walter with a parrot, and came up with a Polly Wally that doodled all the day."



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## OFFICE EQUIPMENT VI

## Basis for office of the future

IN THE past few years computer specialists have begun to use a new phrase to describe a special way of linking small computers and their peripherals—the local area network.

The definition is simple. A local area network (LAN) is a technique for connecting large numbers of often dissimilar computers, workstations, computer memories and printers so that information can be shared quickly between them with a low rate of error.

Manufacturers have already wrought many variations on the theme. A recent report, Local Networks: A Product Review, from the UK office automation consultancy, Urwick Nexos, lists 20 proprietary products before lapsing into eceteras.

To the data communications manager, bioning up frantically on telecommunications to keep in touch with the ordinary networking demands made on him, it may seem to be new technology for technology's sake.

Even so, the arguments for LANs are powerful and there is little doubt that they will form the communications base for the office of the future.

They are suitable mainly for the big company which has accumulated a variety of different types of computing equipment during its growth: minicomputers, from one supplier, word-processing terminals from another, not to mention a mass of company information held in various computer memories.

The aim of the LAN is to make it possible for the individual terminals, be they minicomputers, microcomputers or word processors, to communicate to form the basis of an electronic mailing system and for the terminals to be able to draw information from any of the

memories and give instructions to any of the printers.

Conventional methods of connecting computers to terminals are rapid but complex, expensive and effective for only short distances before boosters or repeaters are needed. The conventional methods used for long-distance data communications over telephone lines are slow, expensive and require costly equipment to detect errors.

LANs offer high speed—often up to 10m bits of information a second, rapid enough to send the entire contents of the Financial Times from one office to another in one second.

They also offer very low error rates by combining a technique called packet switching—whereby the message is divided for transmission, into a number of equal-sized segments or packages—and advanced software.

So in principle the forward-looking systems director will be thinking about how and when to install a LAN. But Mr John Yeomans, author of the Urwick Nexos report, argues that it is still early days for LAN technology.

He points out:

- There are currently no accepted standards for local networks;
- Attachment to a local network will not of itself guarantee compatibility between devices;
- Prices are high and the range of attachments is often limited;
- No LAN supplier can guarantee compatibility with what may be offered in the future.

This final point is given weight by LAN developments in the past few months. One of the earliest companies in the field was Xerox with a product, it called Ethernet. It is based on simple coaxial cable laced around the area the network is to support.

Individual devices are linked to the cable by a "tap" a device for getting electronic signals on to the cable and taking incoming signals off and an interface device which translates between the device and the network.

The devices are divided into users—workstations, terminals, word processors and so on—and servers, which are memories and printers.

## LOCAL NETWORKS

ALAN CANE

Messages from, say, a word processor attached to the network are divided into packets of information each of standard length. Each packet contains part of the message together with control data indicating the source, destination and type.

With the Ethernet system the message is broadcast to the entire network but only those stations for which the message is intended are able to receive it.

The technique the Xerox researchers developed to solve the problem of getting messages on to the network, to their correct destination and then off the network without collisions and confusion, are at the heart of Ethernet and most other local area networks.

It is called CSMA/CD, meaning carrier sense multiple access with collision detection.

The system "listens" for traffic on the data highway—the coaxial cable linking all the users and servers. If there is no activity, the station broadcasts its stream of data packets at high speed.

Because all the stations on the network have an equal right to broadcast it is possible two or more will broadcast simultaneously, causing the data packets to collide.

The stations listen for collisions and stop transmitting as soon as a collision is detected, however. After a random time interval each station tries to broadcast again, first listening for traffic on the network.

By the law of averages all the messages will eventually get through. What makes it all possible in real time is the high speed at which the system works.

Xerox, in collaboration with Intel, a major U.S. semiconductor house, and Digital Equipment, the biggest manufacturer of minicomputers, is trying to establish Ethernet as the standard for local area networking.

Indeed, it has licensed the technology for a nominal sum to a number of leading companies including Hewlett Packard, Nixdorf, Zilog, Ungermann-Bass, ICL, Olivetti, Prime and Thomson CSF.

The U.S. Institution of Electrical and Electronic Engineers, the IEEE, is proposing an Ethernet-like standard as one of its official network types.

In recent months dramatic progress has been made in another and potentially more powerful form of LAN—the broadband network.

Ethernet is a baseband technique; the information travels as a series of electrical impulses and only one series of impulses can occupy the network at any one time.

Broadband techniques make use of the type of coaxial cable used in cable television systems; it is possible to send a number of separate signals

along such a cable as long as they are sent at different frequencies.

This means that the cable can be used for various purposes at the same time—to run a series of Ethernets, for example, as well as a few video channels.

What makes broadband techniques such as Wangnet or Sytek's Localnet so attractive now is the growth in cable television coupled with a sudden decline in the cost of the equipment used to modulate the signal on to the cable.

This is at least partly because of the growth of Citizens Band radio, which uses identical equipment and has therefore improved the economies of scale in their manufacture.

While baseband techniques such as Ethernet seem to have the edge at present, broadband is waiting in the wings and offering the movement of data sound and vision in the same network—obviously an advantage for the integrated office.

It is easy to agree with the Urwick-Nexos report's conclusion that all that can sensibly be done at present is to define the services required of an office system and select the best equipment to perform them.

There are as many choices as there are manufacturers. Logica's Polynet, for example, based on a ring of circulating data slots; or Haseler's Silk, also a ring system but broadband in character and carrying voice and data.

Xinet, the LAN from Xionics chosen by the Cabinet Office, uses multi-core cable and access to the ring is through "intelligent" sockets.

To the user it should not matter greatly which technique is used. The only criterion should be whether it meets his needs or not.



This desk-top "Office Command" communications centre, launched by Forint Communications of Uxbridge, Middlesex, which is now available for as little as £5,000 a year rental. The compact microprocessor-based switching unit is on the left; a hard-copy printer, centre, and visual display unit is on the right.

## Wide range of services offered to consumers

BEFORE the 1939-45 war communication away from the office meant using a call box or perhaps the telephone in a hotel room or customer's office.

Only the police and later the emergency services had the rather crude and bulky mobile equipment of the day.

Now well over 250,000 people in the UK alone use VHF and UHF radiotelephones daily, including those with the portable hand-held units that can be so useful on large sites in such industries as civil engineering and petrochemicals. The annual UK market for mobile equipment is about £50m.

There is also a growing British Telecom service, Radiophone, for calling direct into the telephone network from a vehicle. A number of companies offer message relay services (Aircall and London Car Telephones, for example) and with the freeing of telecommunications in the UK such companies are now also starting to offer direct-connect services.

Paging systems have recently moved on to digital technology and now allow multi-meaning coded signals, or speech, to be heard on a tiny unit clipped to the top pocket.

Such systems, originally used only for in-house paging, are now also employed in a growing British Telecom wide-area plan. Private wide-area systems are also beginning to appear as a further result of the more liberal official policy.

In the past few years it has become possible to send data by radio from places without telephones in convenient positions, from railway marshalling yards and docks, for example.

In the hotel room, a small suitcase opens up to reveal an acoustic coupler and keyboard. The hotel phone is placed on the coupler and the number "dialled" from the keyboard. The user can then send data to his home base computer.

Other hand-held units simply store data that will be fed, on return to base, into the computer. Milkmen are already using them.

The latest aid to the motoring businessman is a BBC proposal called Carfax. If and when it is implemented it will provide a special service broadcasting traffic information by means of a multiplicity of low-power medium-wave transmitters suitably placed to serve local areas.

The idea is to keep the motorist out of traffic jams and hold-ups. It would work on the assumption that any single transmitter would be on the air only briefly to broadcast a local message, allowing time-sharing of only one frequency allocated to the whole service.

The receivers would be correspondingly simple and cheap.

But the cash for setting the system up has to be found and this is hardly a propitious time, although the car radio maker Radiomobile believes the project could be funded through user subscriptions by motorists buying the receivers.

However, the major market continues to lie in the provision of communications equipment for vehicles and individuals and in the provision of services.

Pye Telecommunications, a Philips company, pioneered the equipment business in Britain and remains in a strong position. Now, Marconi, Motorola and Sornio are all major suppliers.

Burndy and Dymar are two strong and growing contenders, while recently Black International Systems entered the market. Most of these companies also offer paging systems, although the specialist UK company in this field is Multitone.

From West Germany, Telefunken and Grundig have been active in the UK.

Curiously, the Japanese have so far made no major move. But in citizens-band (CB) radio, more of a "pop" product and

number of users to share one transmitter.

Each user, however, has his own control code, allowing completely private communication from office to mobile. Connection from office to transmitter also employs a radio link, obviating phone-line costs. Pye quotes an all-in operating cost of about £1.50 a day for unlimited use.

The idea, resulting once again from the relaxation of regulations (in this instance by the Home Office, which allocates frequencies), has been highly successful in the U.S. where there are 7,000 such repeaters.

A problem that continues to beset mobile radio is the lack of frequencies. Although more and more channels have been squeezed into the bands by making them narrower

112.5 kHz is about the limit for clearly audible speech with normal double sideband working; other methods are constantly sought.

Last year an entire Institution of Electrical Engineers conference was given over to the subject. Single sideband working (SSB), phase modulation, digital modulation, these and many other techniques are now being researched.

One solution, applied by Bell in the U.S., has been the advanced mobile phone service (AMPS) in which service areas are divided into hexagonal cells. By allocating a dozen channels altogether and ensuring that not all of them can be used in any particular cell, overall spectrum conservation is achieved and interference minimised.

The Philips Laboratories at Salford, Surrey, are working on single sideband and have reduced channel widths to 5 kHz; the technique is now being examined by the Home Office.

Philips has also looked at trunking systems in which users are not allocated specific frequencies. Instead, all the mobiles use all the channels, with computer allocation ensuring maximum channel-filling and allowing more users than would otherwise be possible.

In the long run it seems likely that more and more of the available frequency spectrum will have to be re-allocated to services that really depend on mobile phones, aircraft, ships, satellites, the military and individuals.

Given enough time many ordinary people will affirmatively want "instant" communication from wherever they happen to be. The first sign has been the surge of interest in CB radio.

Meanwhile, the industry will continue to reduce the size and cost of the equipment, and enhance its performance and reliability. Networks are already being controlled by microcomputer, while specialised analogue and digital integrated circuits are rapidly improving the portable equipment. The trend can be expected to accelerate.

## MOBILE COMMUNICATIONS

GEOFFREY CHARLISH

not likely to become important as a business aid, they and other Far East makers will probably predominate.

CB radio requires no high-power central control base transmitter and is really a means whereby vehicle drivers and other individuals can have a chat. Some professional radio engineers argue that a valuable spectrum is being wasted by CB.

What makes mobile radio worthwhile? The avoidance of wasted time and other resources is the key selling point, but the details are peculiar to each organisation. Service vans fleets obviously operate more efficiently, improving service to the customer and keeping mileage down.

British Gas operates the biggest fleet with 15,000 mobiles. For reporting routing and security purposes the UK has industry employs about 13,000 units.

To help prospective buyers, most of the makers try in their sales literature to get down to hard comparative costings of radio, for example, shows what one gets for £1 in areas affecting the decision to install mobile radio. In terms of operating time: a man on £11,000 with overheads (10 min); a two-ton diesel vehicle (13 min); and a coin box telephone (10 min).

A mobile radio, claims Pye, provides 18 hours of communication for £1 based on seven-year amortisation of the capital cost plus operating costs for a system with 10 mobiles.

To cut costs and open mobile radio up to smaller organisations and individuals, "community repeaters" are beginning to spring up. The manufacturers are setting up sites nationwide that allow a large

very much in demand for today's festive office. Rosewood has an air of understated affluence and quality and its rich tones look well with both traditional and modern glass and metal occasional pieces.

Wharfedale Rosewood, comes in a uniquely large range of completely finished rosewood designed chairs, boardroom tables—all with extending leaves up to 14 feet—and storage cases.

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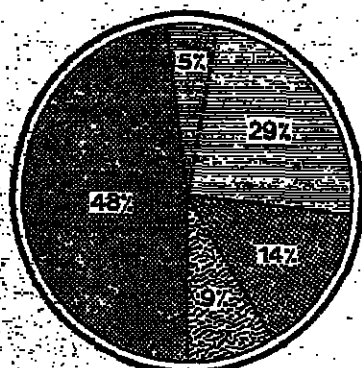


## OFFICE EQUIPMENT VII

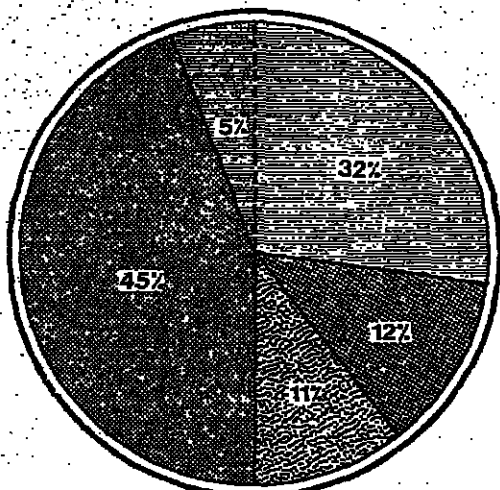
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## MARKET GROWTH IN INFORMATION TECHNOLOGY

1980 World Market £54.4bn



1985 World Market £104.7bn



UK W Europe  
Rest of the World Japan US

Source: PACTEL

## Huge pressures for change

THE APPLICATION of advanced technology is revolutionising business communications. Not only is it giving birth to new and more ingenious types of service, it is also exerting massive pressures for change in the economics of the telecommunications industry and the legal, political and regulatory framework within which the latter operates.

For most of this century telecommunications has been mainly concerned with transmitting human speech. In future, however, increasing amounts of traffic will be in the form of computer data. In the U.S. the volume of data communications, though still relatively small, is expected to grow by as much as 30 per cent a year this decade, three times faster than voice traffic.

In tomorrow's telecommunications systems the two types of traffic will be practically indistinguishable. Traditional analogue systems, which transmit speech in the form of variable frequencies corresponding exactly to the sound waves generated by the speaker, are being replaced by digital networks. These convert speech into a stream of zeroes and ones. Identical to computer language.

In digital networks electronic circuits are used instead of mechanical apparatus to switch calls and can be programmed like a computer to accept new instructions. For instance, if a

subscriber is away from his telephone, incoming calls can be redirected to him automatically.

Copper wire is also being replaced as the standard transmission medium. On the ground a number of countries are installing circuits made of optical fibre, hair-thin strands which can carry thousands of telephone calls simultaneously in the form of pulses of light. From space, satellites can beam high-speed communications across an area several thousand miles wide.

From the subscriber's point of view this process of rapid technological change will bring about many advantages in the form of new types of service. Here are a few examples:

• Videoconferencing: the technique for linking business executives in distant cities by means of closed-circuit television. Though still expensive to use videoconferencing can pay for itself if it reduces the need for business travel.

• High-speed data transfer. In the U.S. Boeing Computer Services is already using satellite links to transfer vast amounts of information and programmes stored in its central computers to wherever they are needed. Thus a Boeing engineer can gain access from anywhere in the country to the detailed technical specifications of, say, an aircraft wing.

• Home information services. Simple terminals, such as personal computers or even modified televisions, can be linked to huge networks through which consumers will be able to pay bills, check their bank

accounts, make confirmed travel reservations or order goods simply by pressing a few buttons.

The consequences of this "information revolution" will almost certainly be felt by every section of the economy. Banks may have to find other uses for their High Street branches as people start to conduct transactions electronically. Department stores may no longer attract as many shoppers if the goods they display can be purchased over the telephone network. Even the need to travel to an office every day may be diminished if managers and staff can use sophisticated communications systems to work from home.

In America, the Federal Communications Commission has already responded to these rapid changes by voting to exempt from regulation communications services which involve computer processing of data. Its decision followed several years of fruitless attempts to arrive at a meaningful distinction between communications, which falls within its jurisdiction, and data processing, which does not.

The Commission's ruling, made last year, was also intended to stimulate freer competition in the provision of value-added services operated on the communications network. These include electronic mail, electronic banking, computer time sharing and videotext information systems.

The Commission also ruled that American Telephone and Telegraph, which enjoys a virtual monopoly over the U.S. telephone network, could participate in the newly deregulated market, provided it did so through a separate subsidiary to be set up by March next year. This ruling has been challenged by the Justice Department but was upheld by a federal court early last month.

AT and T's entry into the market is expected to have a critical impact on its future development. The group is planning to commit massive resources and intends to endow its new subsidiary (known as Baby Bell) with assets of \$10bn and a staff of 100,000.

Some communications experts believe that the battle for market supremacy could turn into a heavyweight slugfest between AT and T and other corporate titans such as International Business Machines and Xerox. IBM has already deepened its involvement in communications through its interest in Satellite Business Services, a joint venture with Comsat and the Aetna insurance group.

In Western Europe responsibility for providing national telecommunications services has been traditionally entrusted not to private companies but to state-owned monopolies known as PTTs. They have exclusive rights to build and operate national telecommunications networks and may also determine what types of traffic they may carry and what apparatus may be attached to them.

This pattern has been broken, however, in Britain, where the Government is now dismantling the monopoly of British Telecom. The liberalisation programme which took effect this month will permit freer compe-

COMPUTER BUREAUX have traditionally provided computing power, at a price, to those companies which either had no mainframe instrument of their own or needed extra computing resources.

What role have the bureaux in office automation, which seems ideally suited to the small, powerful and inexpensive computers now available?

The answer is their unmatched experience in economical computing and in establishing and maintaining the facilities that are the mainstay of office technology.

One example is Automatic Data Processing (ADP), a large and growing U.S. bureau with processing centres in North America and London.

Its success was built on processing using banks of mini-computers made by Digital Equipment (DEC) and a communications network which allowed users with a computer terminal on their premises to access the DEC computers quickly and easily.

But the computing habit becomes addictive, and all bureaux users find their costs rise every month.

Realising that as the price of computers fell companies would be tempted to install their own, ADP launched its On-Site ser-

vice, now copied by a stream of computer bureaux in Britain and the U.S.

The object was to provide the user with a computer of significant size on his own premises for a fixed monthly fee. In fact, the DEC 20/20, a small mainframe, was chosen. The user still had access to the ADP network, however, and could communicate with his own computer remotely using ADP's network.

Such an arrangement is well suited to the provision of automated office services by bureaux.

The principal office activities most susceptible to automation, using up-to-date technology, are document creation and editing (word and text processing), filing and retrieval (electronic archiving), and distribution (electronic mailing).

ADP already offers the word-processing package Ciphertext, which is especially suitable for the writing and editing of technical manuals. It has just concluded an agreement with a Swedish software house, Panalog, to offer a text retrieval system based on keywords.

This is a major application and would be run on the On-Site 20/20. It needs a large amount of computer storage and computer time and would be prohibitively expensive if run as

a time-sharing service. Information retrieval can be well suited to the bureau approach. Seicon Computer Services, part of the largest UK computer services group, provides POLIS, a system of computer-based indexing of Parliamentary information, to the House of Commons.

It runs on Seicon's Univac computers and is a version of Univac's Unidas information retrieval system. POLIS provides a thesaurus containing about 9,000 terms, all of which can be used for retrieval and all of which are cross-related.

It seems that the House of Commons preferred a bureau system because of the expert support Seicon was able to provide behind the package and the fact that while the system was started on a small scale it is expected to grow substantially.

That means an investment in time, cash and people which can often be better left to a bureau. When complete the POLIS data-base will be categorised into nine groups, including Parliamentary Questions, Parliamentary Processing and Press Comment (selective, says Seicon).

Generation of text, storage and retrieval... and distribution means electronic mailing. There should be little resistance

in most companies to the concept of electronic mailing, for it has been in existence in the form of Telex for many years.

Add a powerful minicomputer and some advanced software to existing Telex systems and the result is message switching—the capacity to distribute, store and forward written messages.

Among the latest variations on this fairly familiar theme are the autodialler which repeatedly calls telephone num-

bers until a connection is secured, and the use of optical character-readers to speed the input of messages.

Viewdata systems provide another and more flexible approach. British Telecom has announced a pilot electronic mailing service, called "Mailbox," to run on its Prestel network. This is, in effect, a bureau operation, with British Telecom running the Prestel computers as a large bureau operator.

Messages put in to a Prestel television set pass through the network to the correct address and then displayed on the user's television screen.

This type of service is not limited to British Telecom. Computer Management Group (CMG), a UK-based bureau with Burroughs computers is one of the first British bureaux to consider running a mailbox service on its private viewdata networks.

The Americans, whose bureaux have much greater telecommunications experience than their European counterparts, are well ahead with electronic mailing. In the U.S. the market leaders are Telemail, Comet and a service from a small but significant bureau called Dialcom.

The Comet Service is already offered privately by BL Systems, the computer bureau subsidiary of British Leyland.

Services of the type offered by Dialcom and Telemail are more than simple message-switching operations. Dialcom, for example, offers express mail, where priority can be given to a particular message in the sequence. It will correct spelling automatically and file documents for future use.

One of the main features of the system is the "tickler" or executive calendar scheduling system. This can be used for

planning and posting appointments, reminders, meetings, and other activities and events with specific deadlines.

For example, the system will automatically warn a user who tries to plan a meeting for a time when a previous appointment has already been fixed.

The system also permits access to sources of news and general information such as the UPI, Reuters and Associated Press computerised databases. Dialcom should be operational in the UK early next year.

Bureaux such as ADP have established networks which could be used for electronic mailing. It is already used internally, but the decision to offer it as a service has yet to be taken.

It is making progress in the development of "application machines," computers designed to carry out one specific function for a particular class of user.

For example, ADP points to its hotel systems and local government housing maintenance systems, based on a powerful micro-computer known as the Rair Black Box.

The less esoteric end of the market should not be overlooked, however. If typing is all you need, there is always your friendly neighbourhood word-processing bureau.

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CONTINUED ON  
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## OFFICE EQUIPMENT VIII

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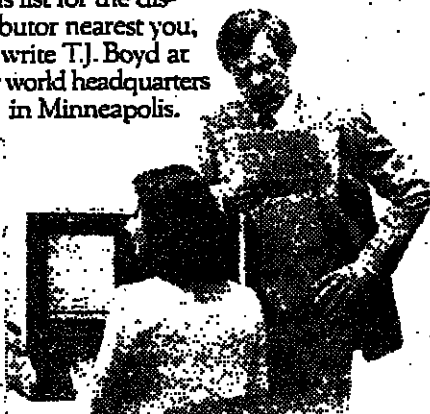
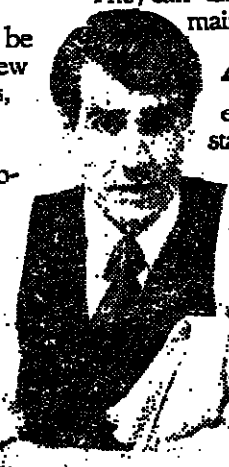
2. CPT is truly international, in scope. We have distributors serving over 50 countries and 135

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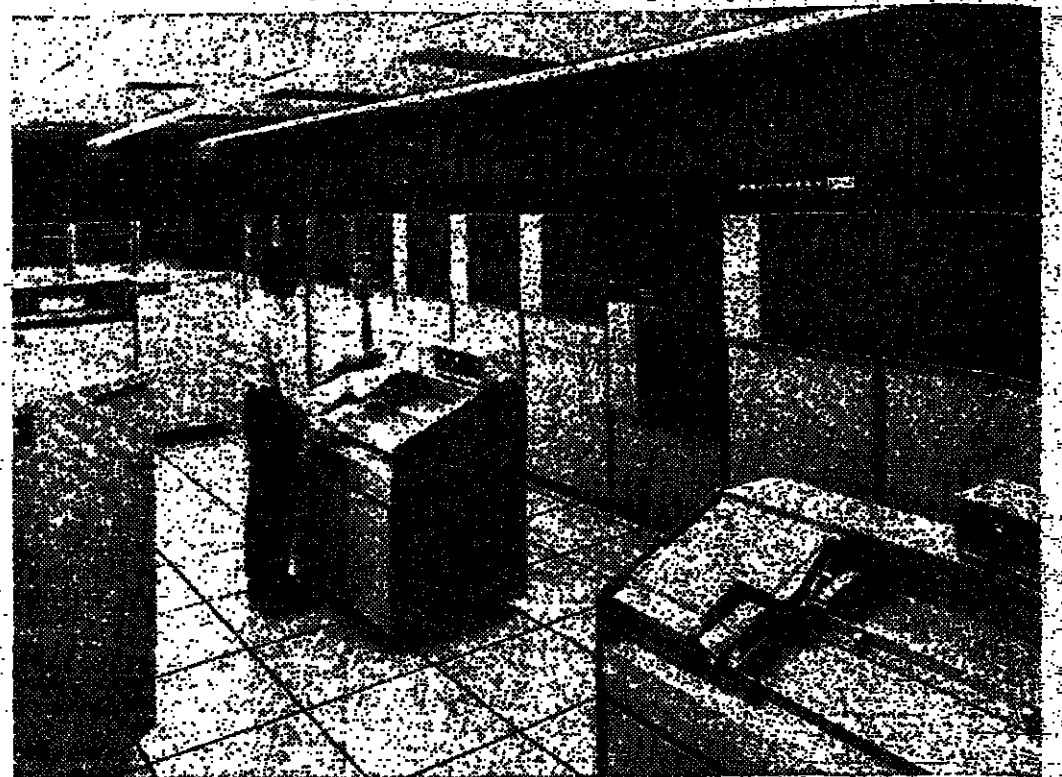
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\*Telex or telephone CPT for name of nearest office. \*\*To be announced.

## Clear picture of objectives needed at all levels



Banks and financial institutions are making increasing use of computer technology. Above: a Burroughs B-5500 computer, capable of processing all of Barclay's Bank's customers' accounts.

SYSTEMS MANAGEMENT  
ALAN CAINE

concept of office automation. Powerful efforts must be made to combine skills across departmental boundaries.

In the past, office services—the provision of typewriters and the like—were the responsibility of one manager, telecommunications, data processing and personnel management were the responsibilities of others.

Office automation demands a cross-fertilisation of all these skills. Mr Ronald Yearsley, of BIS, who has made a special study of the office, believes that when an organisation takes on new technology, it believes that within larger companies a new type of manager with responsibilities covering all the new technologies is emerging.

This manager, with responsibility for management systems—office systems, telephones, data-processing—could come from general management or from the data processing stream.

Mr Yearsley's conclusion, after visiting a wide cross-section of companies, is that the first response to the challenge of office automation is to set up a working party.

In his experience, only about 20 per cent of these working parties are chaired by the data processing manager.

The company must have clear objectives in setting for office automation and it must have a realistic idea of the benefits it expects to get. It is more important, Mr Duggan argues, for a company to look for "positive" benefits such as increased productivity than "negative" benefits such as reducing staff.

The company must draw up an action plan. The Urwick Nexos report Managing Office Automation says: "An action plan for office automation is concerned with identifying opportunities, matching them to the technology, assessing the cost benefits, and defining an implementation strategy."

The company must draw up installation guidelines covering equipment selection, site survey, organisation and responsibilities, maintenance and support.

So what does all this mean for "Fred Palmer", the mythical managing director of Southern Services, preparing reluctantly and apprehensively to install word-processing, electronic mailing and a voice

message store and forward system?

It means planning and education at all levels. The managing director will have to realise that for many of his staff the threat of the silicon chip that takes away existing jobs will take form and substance with the advent of the new systems.

The Urwick Nexos study advises: "A competent manager should anticipate these fears and have a satisfactory answer ready for each question. Where the fears are unfounded, assurances can be given. Where they are real, they should be dealt with using existing consulting and negotiating procedures or, if these prove inadequate, through the creation of an office automation strategy group to formulate new procedures in consultation with staff."

It points to the example of the Civil Service (potentially one of the largest users of office automation), which carried out trials of word-processing systems with the aid of 56 typists.

All 56 women were involved in planning the studies and proper care was given to health and environmental factors. At the end of the study, only four of the 56 opted to go back to using typewriters.

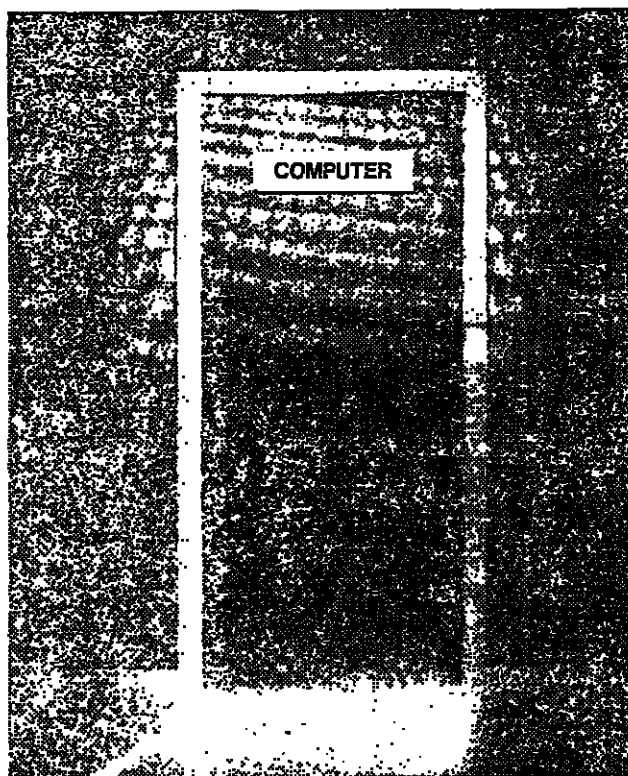
Where even the most enlightened organisation may need help is the identification of technological milestones—spotting the way particular supplies are moving so as to make the best use of advanced equipment and avoid being trapped in technological dead-ends.

For example, given a parcel of advanced technologies including packet-switching, satellite transmission, teletex, local area networks and digital facsimile, it is clear that an organisation must have some idea of when and how any of these options will become available and useful to it.

Picking technological winners is not easy. Most companies would be wise to seek the advice of a specialist consultant, unless they are prepared to give up time and resources to research the problem thoroughly.

Even the most prophetic interpretation of where the technology is going will be a little "avail, milnes, enough" thought has been given first, keeping the staff who will use the new systems fully informed and aware of what is happening.

## For 25 years, the most powerful tool of the 20th century was kept in the back room.



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What's good for the computer is good for the word processor.

This simple process Wang also applied to word processing—very necessary

in view of the fact that 80% of the information received in any office arrives in the form of words, not numbers. The result? Wang are now among the world's leading manufacturers of word processing systems—and the first company to put word processing and data processing together on one system.

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## Huge pressures

CONTINUED FROM PREVIOUS PAGE

tion in the sale of equipment like telephone receivers and PABXs, in the provision of communications services and in the construction of independent networks.

Against fierce opposition from British Telecom, the Industry Department has approved a project drawn up by a consortium formed by Cable and Wireless, British Petroleum and Barclays Merchant Bank to build and operate a technically advanced network. It is intended to link business subscribers in major cities and will be able to carry high-speed data traffic, video-conferences and other services as well as voice communications.

The consortium has committed £50m to the first phase of the project, which it hopes to have in operation before the end of 1983. It also hopes to win approval to inter-connect its network with British Telecom services and to extend it to users in North America.

Liberalisation has also galvanised British Telecom into greater activity. It has announced plans to start a satellite business communications service in 1983, is studying the possibility of a joint broadcasting and communications satellite venture with the BBC and wants to speed up the installation of digital systems on its land-based network. But its investment plans are at present still somewhat overshadowed by the Government's continued restrictions on its borrowing powers.

Authorities in the rest of Western Europe are observing the British experiment with curiosity and some apprehension. None of them seems prepared yet to embark on a similar course and most Continental PTTs can be expected to resist strongly any attempts to loosen their national monopolies.

None the less the next few years are likely to present them with some difficult challenges. The quickening pace of techno-

logical change and the need to offer competitive services are already reshaping the economics of the communications business, and the PTIs will have to face up to increasingly heavy investment requirements if they are to keep abreast of developments.

As a group the PTIs are heavily committed to land-based communications. But ripping up millions of miles of copper cable buried in the ground and replacing them with optical fibre is an expensive and lengthy task.

## Changes

Moreover, most PTIs are accustomed to following extended depreciation schedules of as much as 40 years on some types of equipment. But advances in technology are shortening the gap between each generation of product. The "step changes" in electronic switching equipment, for instance, now occur at intervals of less than 10 years, compared with 25 years or more for traditional mechanical equipment.

In an effort to reduce their costs by achieving economies of scale British Telecom and its West German counterpart, the Bundespost, recently opened discussions on co-ordinating their purchases of optical fibre. If the idea is put into effect successfully other types of cross-frontier collaboration could follow.

Whether the PTIs will be forced to go still further is open to conjecture. In the last analysis their policies are rooted in financial considerations. They have strongly resisted attempts by outsiders to poach on their monopolies because they feared that this would result in loss of revenue. But if the PTIs were to be convinced that allowing private competitors free rein would boost their profits by generating additional traffic, self-interest might dictate a reappraisal of policy.

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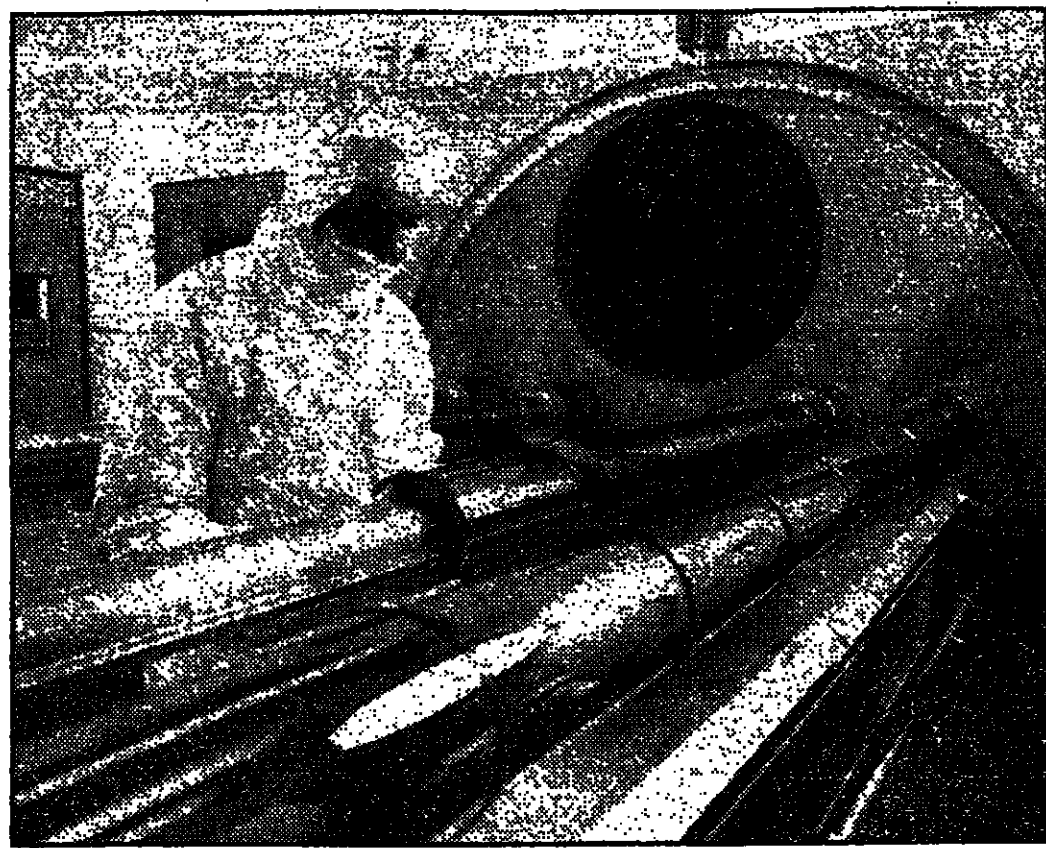
At Byfleet, Gestetner research and manufacture photoconductor drums, both for their own copiers and for export to other manufacturers.

THE HEART of modern plain paper copier technology is the selenium photoconductor drum, a precision-turned aluminium cylinder coated with a mirror-like film of selenium alloy. It is this that electrostatically records the image to be copied and deposits it, in the form of fine toner powder on to paper.

In the late 60s, Gestetner decided to master the research and manufacturing processes for this essential part of the modern reprographic scene. Ten years ago the research and manufacturing plant at Byfleet was opened, and it has been

developing ever since. Apart from supplying drums for Gestetner's own copier range, Byfleet supplies selenium photoconductor drums for most types of plain paper copier in use worldwide, and also conducts research programmes for many other major copier manufacturers.

Currently, the plant is working around the clock in eight-hour shifts to meet demand for its drums, and order books are full for a year in advance. A further £800,000 is being injected by Gestetner into the plant as part of an overall



Photoconductor drum coating under clean room conditions: fine tolerances are crucial

expansion programme at Byfleet, bringing the total so far invested to over £4m. The new capital will considerably expand the plant's capacity. Some of the new funding

will be used to install another vacuum coating plant to meet projected future orders. When this is completed, total production is expected to be boosted by 40 per cent.

Money will also be spent on extending "clean room" facilities at the plant. This is the area where special clothing has to be worn, and ventilation specially filtered and controlled, to ensure the extreme mechanical and chemical tolerances of the coated drums are not impaired. More automated handling equipment will be installed, and the unique automatic test-scanning equipment will be computerised.

## Scanners

The scanning equipment, manufactured by Byfleet's own design, and on which every drum is tested, simulates the characteristics of any make of plain paper copier and records drum performance on an individual "fingerprint" readout. It ensures that every drum produced conforms to strict electro-photographic specifications.

The Byfleet plant was established in 1971 to produce drums for Gestetner's entry into the copier market. Backed by appropriate research and development expenditure, output of drums forged ahead, and the 500,000th came off the lines in March of this year.

Such has been the growth of output, and outside demand, that Gestetner itself is currently using less than 10 per cent from Byfleet in its own copiers. However, with the growth of Gestetner's own copier business, output will rise to about 25 per cent of total production, in the near future.

## Research

Some indication of the precision and quality aspects of the Byfleet operation can be gauged from the fact that about 20 per cent of the staff at the plant are engaged in pure research and a further 12 per cent on product development. Furthermore, some 25 per cent of all production workers are involved with some aspect of quality control.

Part of the new expansion programme includes taking on

new research staff to increase the capacity in that area.

Research work from outside customers is undertaken by a completely autonomous unit and is completely confidential to the commissioning organisation.

## Non-impact

Apart from the manufacture of selenium drums, Byfleet does a brisk business in drum recycling. The drums are returned to the plant after their useful life, and are then stripped of their selenium coating. The reclaimed selenium sludge is returned to the supplier for refining, and the stripped aluminium drum cores are re-coated for use once again.

Once installed in a copier in the field, a drum coating lasts on average about one year. With a working life of perhaps 3 or 6 years, a copier would require about six drums during its lifetime. With some customers, a fairly high proportion of their requirements can be met with re-cycled drums.

Lindsay Malcolm, Byfleet's managing director, says that research is now being directed towards developing alloys which will stand up to a much longer life. Whereas an average copier produces 100,000 copies from a photoconductor, a faster non-impact printing device may make 500,000 to 1m copies from the drum in the same period. So the alloys themselves have to be better.

With a constant eye to the future, Byfleet is actively investigating different photoconductive alloys for use with laser imaged non-impact printing devices. Non-impact printers are able to make "hard copies" direct from electronic digital data.

The big difference, essentially, is that non-impact printing devices have a very low light-energy input compared with conventional copiers, so that the film has to be many times faster—some 25 to 30 times faster than conventional selenium drum models.

## Potential

However, Mr Malcolm does not see the non-impact printer market really taking off in a big way until, say, 1983-84. Because of this, the new alloys his research team are developing are unlikely to be commercially exploited before then. "Growth in the copier market is evolutionary rather than revolutionary," he points out.

Nevertheless, he sees a great potential for the copier market per se. The plain paper copier, he says, has been one of the biggest growth markets in the world consistently over the last 15 years. He does not envisage any diminution in that growth.

"When you add to the present market the non-impact printers, I think you are looking at a pretty big growth curve," he predicts.

# R&D sets the pace

Continuing international research and development programmes ensure the best products for use in Gestetner's varying worldwide markets.

FACED WITH Japan's increasing involvement in the office equipment sector, Western companies are intensifying their efforts in research and development—and this move is "absolutely essential to keep you ahead of the game," emphasises Mr Michael Maynard, the director of Gestetner's extensive research and development programme.

Gestetner's international research and development projects are co-ordinated from its UK headquarters at Tottenham, North London, while important research contributions are also made by the group's technical units in Denmark and Germany. Gestetner is not the only company to benefit from this intensive R and D programme. Other companies have, for example, made good use of technology from the selenium photoconductor drum plant at Byfleet, Surrey, and from the Gestetner paper mill at Kilbogie, in Scotland.

These two units have achieved international recognition for developments in their fields. Gestetner also undertakes research projects for other companies which seek to benefit from the group's wide experience in the reprographic field.

At Kilbogie, for instance, the research team was one of the first to fully appreciate the advantages of a fundamental change in papermaking techniques, by moving from conventional acid systems to a new alkaline method. This technique, which uses calcium carbonate as a paper filler, offers major economies and produces a higher grade of paper.

## Technology

Since this development at Kilbogie, there has been considerable demand from international paper manufacturers for technical assistance from the research and development division at Kilbogie.

At the Tottenham headquarters, the R and D team has advanced the stencil duplicator to its present stage of refinement and is continuing to enable it to continue to dominate in its sector of the office equipment market.

The company, having worked for years to bring the traditional duplicator—and later the offset duplicator—to its present advanced design, has now made impressive advances in furthering the technology of plain paper copiers.

Thus, Gestetner was also the first manufacturer to take full advantage of microelectronics in the stencil process. The group's



Investigating the structure of copier toner powder on an electron microscope

R and D department now claims to have some of the most advanced facilities in its field.

Further more, Gestetner has sponsored advanced research programmes at universities in the UK.

Typical projects have included work in the photoconductor field as well as advanced emulsion technology for inks and powders for improved copier toners.

Since Gestetner's distribution network covers 132 countries, one of the important functions of the research team is to ensure that Gestetner products function under a variety of climatic conditions. In many markets, local conditions dictate basic alterations in machine design and supplies specifications.

For example, research technicians have produced special inks that function in humid and tropical climates. Other markets in Asia require machines that will accommodate oriental paper

sizes. Gestetner's policy is that all its products—machines, ancillary items and office supplies—must be able to withstand extremes of climate and handling conditions. Thus, special export packaging has been developed and machines are protected in climatic simulation chambers to ensure that they function under the most rigorous conditions overseas.

The group's latest research projects are based on advanced electronics, laser technology and materials behaviour in the full range of office, hardware and supplies.

Thus, Mr Maynard is confident that with such projects as the "intelligent copier," the use of lasers, and the more advanced types of stencil and offset processes now being developed, that Gestetner is set to play an even greater role in the international office equipment market.

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THE KEY to success in the reprographic business is to provide reliable and economical equipment, exactly suited to the needs of the individual user.

And this service Gestetner is well able to provide—not only because of its wide product range and its emphasis on research and development, but also because of the geographical scope of its service and distribution network.

Worldwide, Gestetner has more than a million customers—and one million more in the group, which also has 3,000 sales personnel in 132 countries, has sufficient involvement with the varied needs of its individual clients.

But the users of Gestetner equipment are enthusiastic about the company's ability to meet the wide spectrum of their reprographic requirements which range from the occasional convenience-copying jobs to highly-intensive, in-plant printing projects.

One customer, a company director, comments: "When I called the Gestetner representative, I found more than just a copier salesman. He was able to show me how to keep copying costs down in my particular business—in other words, he matched his machines with my company's needs."

As a result, adds the client, the Gestetner representative produced a machine "which gave us real economy... and the right level of service and let us off the hook of high copy costs."

Gestetner believes that its success is based not only upon the quality of its products—which range from plain paper copiers and duplicators to offset printers and a wide variety of ancillary equipment and supplies—but also on the way that the company selects its sales personnel and on the system by which they are trained to ensure that the customer receives the maximum benefits from the equipment.

The Gestetner philosophy is that the product must provide the individual user with clear

Understanding the different needs of a wide range of office users and recommending the product which is right for the job.

benefits. Thus, a vital aspect of Gestetner staff training is the ability to assess the volume and frequency of copying required by each client—whether that customer is an individual buyer or a large international company.

Such information is the key factor in recommending the right reprographic equipment from the growing range of Gestetner business systems. Office products range from plain paper copiers to the latest automatic table-top offset duplicators. And, in between, there is a variety of equipment to suit almost all volume/cost situations in copying.

## Cost per copy

The usual cost per copy from plain paper copiers ranges from 2p to 7p a copy and this is reduced to less than 1p a copy with the latest Gestetner automatic offset equipment.

Furthermore, the Gestetner representative is responsible for overseeing the installation of the customer's machine and for providing training for the user.

He also arranges training in one of Gestetner's Customer Training Areas for those clients who purchase more advanced equipment. Customer training facilities are located in London and most of the main provincial centres of Britain. These centres are equipped with a wide range of Gestetner machines—and the service is free for the first operator sent by the client company.

To ensure that the customer achieves full economic advantages and dependable follow-up service for the equipment, each

Gestetner salesman works closely with his other colleagues—and their activities, in turn, are closely co-ordinated by branch managers and regional sales personnel.

In the case of larger clients, such as national and international companies, Gestetner operates a Large Account Division, which co-ordinates negotiations which may, for example, hinge on the question of cost/unit price or specification changes and customised business applications.

With each item of equipment sold by the Gestetner group there is a comprehensive service contract. And to provide the fastest possible back-up service, engineers are in touch with Gestetner offices by radio control so that in the majority of areas a call can be attended to within a matter of hours.

To further ensure that servicing is carried out as efficiently as possible, the company has developed a handy "parts pack" which each service engineer carries with him.

These parts are pre-selected by computer as the ones most likely to be needed by various groups of reprographic equipment. Gestetner's stock control department also has a computer link with the group's central warehouse in the Midlands—thus, any special items or parts can be rapidly despatched to area service engineers within 24 hours.

Another Gestetner service also simplifies the re-ordering of paper, ink and other office supplies, as the company regularly keeps in touch by telephone with its customers. In turn the client can also contact Gestetner's tele-sales team if he or she needs to order extra supplies.

The British sales operation of Gestetner is, in a sense, reflected in the steady expansion of the group's large overseas sales and service projects.

Gestetner International—the company that decides the sales policy and organisation, worldwide—ensures that a high standard of service is maintained throughout the group. And long



Nationwide coverage: there are Gestetner centres throughout the UK and Ireland

before a new product or service is launched overseas, the local staff—from engineers to management—will have received specific training, based on the knowledge acquired by their British counterparts.

## Confident

Gestetner U.S.A. is by far the largest marketing unit in the group and is headed by Mr Ernest Raasch, its President and Chief Executive. The subsidiary probably has one of the most advanced distribution networks in the office equipment market in the U.S.

Thus, the Gestetner organisation is strongly committed to further advances in the U.S. market—the group has, for example, recently become involved in marketing decentralised office systems.

There are 71 Gestetner branches throughout the U.S. in addition to a network of 235 dealerships. And each facility is supported by factory and

service-school trained technicians.

Mr Ernest Raasch is confident that Gestetner is especially well-placed in the U.S. copier market, as well as in other areas of reprographic equipment. Last year, for example, some 375,000 copiers were sold in the U.S. alone.

Among the group's new products is a micro-computer, designed and manufactured in the U.S. for handling mailing lists. With this system, Gestetner also offers a computer software programme called "Mail Man"—the first of its kind to be marketed in the U.S.

This system can, for example, pre-sort 70,000 names and addresses and has 36 different methods of selection. Using a floppy disk system, "Mail Man" can also handle 70,000 mailings at greatly reduced costs, compared to other systems. This mail-handling development is yet another example of Gestetner's aggressive and successful policy of widening its product range in the highly-competitive field of office equipment.

## And the lighter side of product demonstrating

OUTSIDE THE showroom, Gestetner keeps its products in the public eye through a variety of promotional activities, ranging from expedition sponsorship, to a sailing showroom, and participation in all major trade fairs and exhibitions.

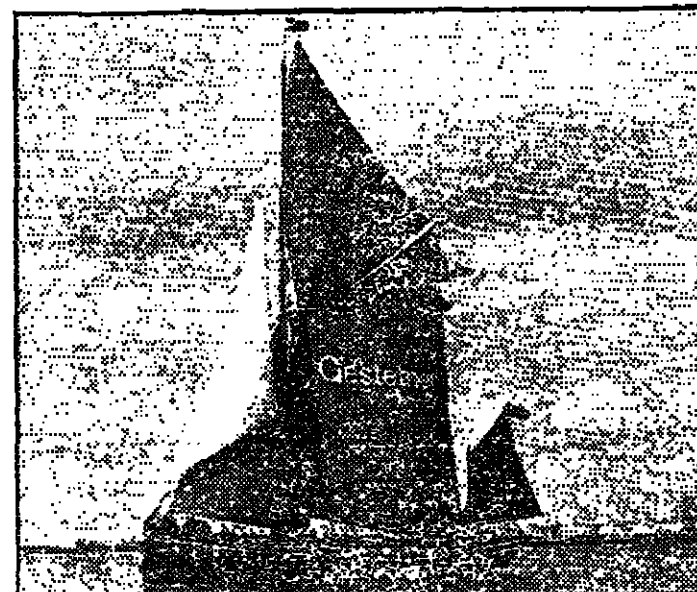
Next week, from October 20 to 29, Gestetner will have its equipment on show in Birmingham at the International Business Show (IBS), one of the prime annual showcases for the international office equipment industry.

For the third year in succession, Gestetner will dominate the show with a stand occupying 778 sq metres exhibiting 23 different Gestetner reprographic machines, seven of which are new to IBS. Two of these machines, the new 2020 copier and 329 automated offset, were launched just prior to the exhibition, and there will also be new Gestetner photocopier equipment on show for the first time at IBS.

The Gestetner stand is so large that the IBS organisers required a walkway to be put through it. General manager of Gestetner's UK sales subsidiary, Mr Bill Reigate, comments: "This is a spectacular working showroom transported to an exhibition site with the very latest Gestetner equipment. We want visitors to see how good reprographics can be."

One of Gestetner's sales demonstration vehicles is a restored Thames sailing barge, the S.B. "David Gestetner." Fitted out as a showroom, the sailing barge carries the full range of Gestetner reprographic equipment. The "David Gestetner" sails to British and European ports from spring to autumn.

"Flying the flag" for Gestetner and British industry, built in Harwich in 1915, Gestetner's flagship is the biggest of the wooden spritsail barges built, and is the only sail-



S.B. 'David Gestetner': flying the flag across European waters

ing barge involved in actual trading today.

## Reliability

Gestetner's sponsorship commitments further extend this pioneering spirit. It has been a longstanding claim that the company manufactures equipment to suit virtually any copying need, anywhere in the world; a claim supported by several recent scientific and explorational expeditions. The Zaire River expedition, Operation Drake, and the Transglobe expedition have all benefited from Gestetner involvement.

Apart from reprographic equipment and supplies for use by the expeditions, the company has also provided other essential equipment. It was from a Gestetner-funded, giant inflatable craft that members of the Zaire River team caught a hitherto unknown species of fish—named "Barbus Gestetneri"—as a result. Unfortunately the fish, a type of carp, does not match Gestetner's capacity for reproduction anywhere under any conditions.

Operation Drake, which involved scientists, explorers, and young people from many

different countries, used a Gestetner 1566 Faxit unit to produce essential paperwork. Despite being housed in the brigantine "Eye of the Wind," and subjected to all the excesses of the tropical climate, the equipment remained thoroughly reliable throughout the two-year expedition.

Such expeditions, of course, are a proving ground for Gestetner equipment. At the other end of the climatic spectrum from Operation Drake, the British Transglobe Expedition, for which the company provided a SnowCat vehicle—the "Gestetner Groundhog"—is currently completing the hazardous North West Passage to the Arctic Coast.

When the expedition's winter base camp was set in sub-zero conditions on the edge of the Antarctic ice plateau they had a Gestetner machine with them. The expedition leader, Sir Ranulph Fiennes, radioed this message to Gestetner: "Our duplicating machines and scanner, for use in London and the Polar camp, have been invaluable. Transglobe would not have got off the ground at all but for the steady support of Gestetner's specialist equipment and help in a hundred different ways."

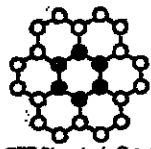
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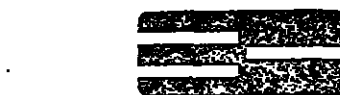
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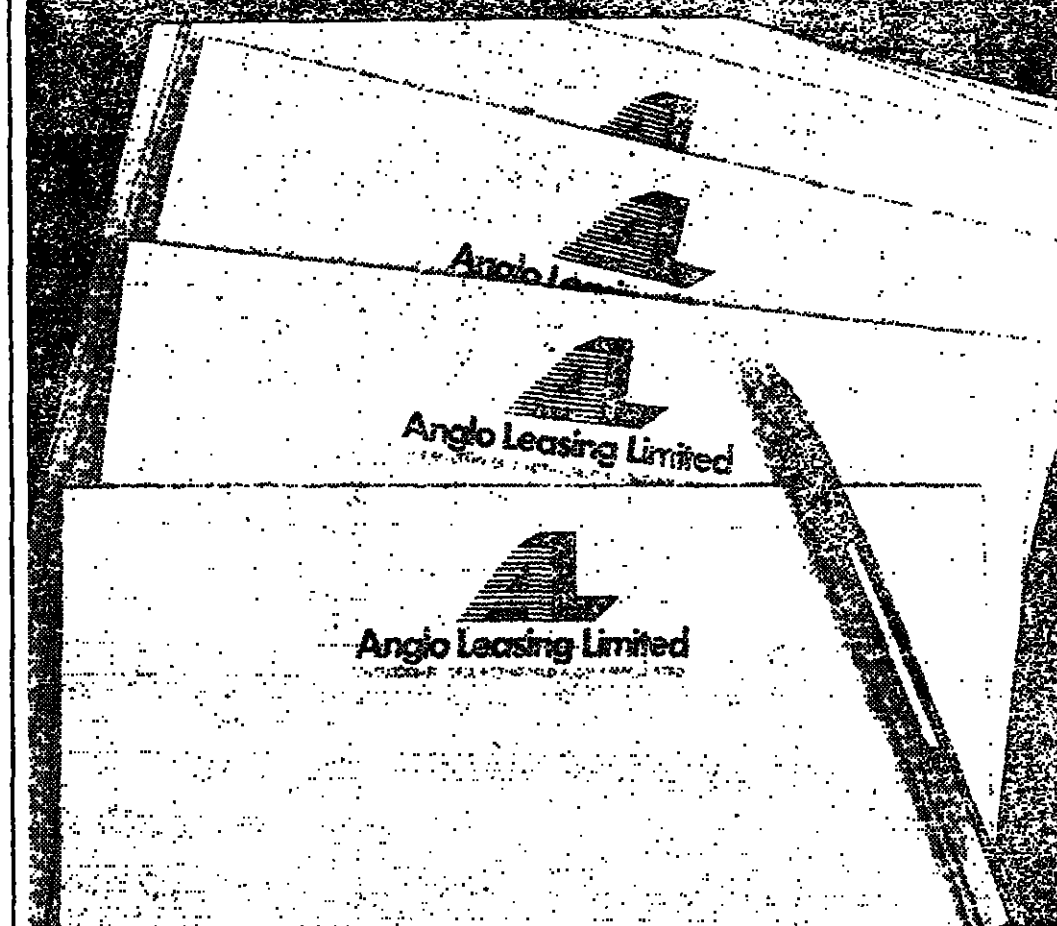
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## ADVERTISEMENT

## Gestetner

## Scottish paper successes

SCOTLAND IS the base for Gestetner's special papers and coated paper products production. Heavy capital expenditure in recent years has transformed the paper mill at Kilbagie, Alloa, into one of the most advanced units in the world for the production of the special papers needed by today's sophisticated reprographics industry. In parallel at Stirling has been established a new factory for the production of special coated papers to make masters for duplicating and offset machines.

While Stirling was purpose-built, the manufacturing company of J. A. Weir at Kilbagie was already established when Gestetner purchased it. At the time of the take-over the company was producing not only the paper suitable for Gestetner's range of duplicating machines but also paper and card for the general printing trade. After the takeover, Gestetner began to move the company towards the types of paper it needed for its own use.



New paper roll winding plant at Kilbagie Mills, Alloa, Scotland

Later the company began to develop paper for machines other than their own, the name of J. A. Weir was revived and Gestetner began to take advantage of the export opportunities available through its own worldwide sales and service organisation.

## Changes

Over the years there has been considerable innovation at the Kilbagie plant. The greatest breakthrough being the change initiated by the company technical division in the fundamental

way the paper was made. This change was from the normal acid-based system to an alkaline system which used calcium carbonate as a filler. Not only did this result in substantial economies of production but a stronger, better quality paper was produced for reprographic use.

The Kilbagie mill has now become one of the acknowledged world centres of this method of papermaking and the mill's research and development work in this area has brought a growing number of papermakers worldwide to Kilbagie for technical advice and help in converting to this process.

than it should be. The reasons for this are partially due to a misunderstanding of the overall economies involved and partially due to the scarcity of that ever-vital resource—capital.

## Advantages

On both counts Gestetner is in a unique position when it comes to reprographic equipment. The economies of reprographic systems are often misrepresented by manufacturers with a narrow range of products which they attempt to justify for situations for which the equipment is patently not suitable. This immediately results in disappointment, and future disbelief in claimed economies. Gestetner, on the other hand, with a broad range spanning duplicating, offset and copying equipment is in a unique position to recommend the correct choice for a particular situation and then demonstrate the economic advantages which are there to be had.

## Solution

Being aware of the cash-flow problems associated with the outright purchase of equipment, Gestetner determined to find a solution for potential customers. In 1963 Gestetner was the first of the reprographic equipment manufacturers to arrange leasing facilities. Today some 25 to 30 per cent of all Gestetner's customers take advantage of these facilities and in the case of items such as plain paper copiers, the percentage is even higher.

## Stirling

In the ultra-modern plant at Stirling is produced the coated paper used to make the masters for the electronic stencil process. The plant, originally designed to produce 20m masters per year, has already seen a doubling of capacity.

One quarter of the output is fully prepared as complete masters and sent to Gestetner's Rex Rotary subsidiary in Denmark. The balance is sent to Gestetner's Tottenham factory for making into masters.

## The million dollar Chinese connection

THE VAST emergent Chinese market for Western products has been successfully penetrated by Gestetner through the enterprising use this summer of a four-month promotional mobile symposium on a train.

Covering 9,000 miles, Gestetner's two converted railway carriages brought the benefits of Gestetner reprographic equipment to end-users in 17 cities throughout China. As a result, a record \$1m worth of export orders have been received and more are expected.

Gestetner's train is the first such promotion mounted by a Western company in China, and its success has opened the door for other companies to follow its lead. Currently, similar mobile exhibitions are being planned by American, Italian and Japanese companies.

Gestetner has been trading with China for the past 50 years through its Hong Kong sales subsidiary, and is a major supplier of reprographic equipment to both central and provincial government agencies as well as prominent educational, medical, and industrial establishments.

With the relaxing of trading conditions in China, and with education high on the list of

priorities within the country's Four Modernisations programme, it was felt that the time was ripe for a more direct approach to consolidate Gestetner's position.

Gestetner Hong Kong's managing director, Mr Jack Crook, who negotiated the project with China's Ministry of Railways and the China Council for Promotion of International Trade, said: "Our aim was to get to the end-user and educate him to choose the correct equipment for his needs." With his experience in the Chinese market (Gestetner manufacture special width machines for wider Eastern papers), the company was well poised. "We knew our market and what they wanted so we were able to tailor-make our presentations accordingly," commented Mr Crook.

To this end, one of the two railway carriages was converted into a 60-seat theatre and the other into a showroom and reception area. Throughout the tour, slide programmes, seminars and practical demonstrations were given in local dialects. More than 10,000 people from Kuming in the



Trans-China express over the north of China with Gestetner reprographic equipment taken this summer

south up to Harbin in the north visited the exhibition. Particular interest was shown in Gestetner's plain paper copiers, which were ordered in preference to the Japanese machines available in China. Stencil and offset duplicators were also ordered in large numbers.

During the promotion, the joint chairman, Mr. David Gestetner, visited the train. On his return he said that although the negotiations had been hard work, the project was a great success by any standard, and the Chinese had welcomed the Gestetner sales team.

They strike hard but realistic bargains and stick to them," he said. "Doing business in China is a bit like making friends, it is a long-term relationship and provides a solid basis for growth." Following the success of the tour, Gestetner plans to extend its services in China. Already, a service centre had been established in Beijing, with copies who, continuing to work, the project was a great success by any standard, and the Chinese had welcomed the Gestetner sales team.

## Lease or purchase? That is the question

For the competitive business seeking to upgrade its reprographic equipment, leasing offers an economic alternative.

TO KEEP ahead or nowadays even abreast of the competition requires constant up-dating and investment. This is as true of the office as it is of the factory. All the time new, improved equipment is being made available which offers ever greater advantages to the office user. The chances are though that up-dating office equipment is further down the priority list

## CopyGirl centres expand in UK

Gestetner CopyGirl is determined to establish a national presence in the High Street

THE LOCAL "copy-shop" offering over-the-counter office copying and duplicating has, in the last decade, become a recognised part of the high street scene. Taking advantage of its complete range of equipment and the rising popularity of this sector of the reprographics market, Gestetner is currently setting up its own nationwide chain of licensed copy-centres—called CopyGirl.

Established on an independent licence basis, CopyGirl centres provide a complete reprographic service, using Gestetner's own equipment. Customers can bring documents into a CopyGirl centre to be copied or printed in small or large numbers, which can be collated and bound in the shop as well. The centres also carry paper and supplies for customers' own equipment, saving time when ordering these items.

## Quantities

CopyGirl centres have proved very popular, particularly with small businesses and the self-employed. Such customers often wish to avoid capital outlay on their own equipment yet have an occasional need for large quantities of mailings, as well as regular copying of documents such as reports and presentations.

At the moment there are 18 CopyGirl centres around the UK, but the chain is rapidly expanding and a further 30 sites will have been allocated by the end of this month, from Plymouth to Scotland. In fact

CopyGirl is growing as fast as suitable locations can be found. Although CopyGirl licensees are the sole owners of the business when their licences are granted, the operation will trade under the CopyGirl name and gain the benefits of Gestetner's support. The licensee provides capital for operating the business having paid the licence fee, and the only other payment is a service charge based on sales volume.

Gestetner is currently receiving applications from potential licensees and is constantly seeking suitable new premises in high streets and other business centres, throughout the country.



Inside the Gestetner CopyGirl Centre in London's Euston Road



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Guy de Jonquieres shows how three organisations are taking advantage of the advances in information technology

## Star Computer: the electronic office arrives

WHEN Star Computer, a small but rapidly expanding computer systems company, moved its headquarters from London's West End to Shoreditch last year, it decided to follow some of its own advice by setting up an electronic office.

"Being computer people, we decided on a computer solution," says Mr David Blechner, joint chairman and chief executive. "We put a terminal on everybody's desk. The terminals were linked to a powerful but compact com-

puter, which hums away in a glass cubicle in the reception area.

The system took only five weeks to develop and has been almost trouble-free since it entered service. By installing video display terminals which it assembles itself, Star kept the cost of the project well below £100,000.

After some initial diffidence among employees, the system has undoubtedly proved a success. Though many of Star's 100-strong

staff are computer professionals, even raw recruits have found it easy and convenient to operate and now treat it with the same familiarity as the telephone.

Employees start the day by "checking in" on their personal terminals. Their arrival is immediately recorded on a computerised "staff locator" displayed on a terminal on the desk of the switchboard operator. In the same way, employees can advise the operator of their whereabouts.

Paper has been virtually abolished for internal communications. These are now sent by typing messages into terminals and sending them to an "electronic mailbox". Because the same memorandum can be circulated as easily to 50 people as to one, Mr Blechner observes with some misgivings that the volume of internal correspondence has risen sharply.

When the system was installed, Mr Blechner disposed of all but one of Star's typewriters — the survivor is

used to type forms which cannot be handled on a printer. The system is used as a word processor to prepare all printed correspondence and reports and keeps computerised files of all frequently-used names and addresses.

As well as handling routine tasks like payroll and accounts, Star's electronic office keeps information on clients. When a client calls in, Star executives can summon up immediately on their screens a comprehensive record of his account, com-

pleted contracts, work in progress, billings and so on. Some employees have used their own initiative to find new applications for the system. For instance, the receptionist at Star's headquarters has devised an "electronic diary" in which she records information about executives' future appointments and travel plans.

Mr Blechner says that the system has enabled Star to keep tight control of administrative and support staff. The company, which had a

turnover of £3m last year, employs only two bookkeepers, two typists and two personal secretaries. The typists work as a "pool," and Mr Blechner reckons that without the system Star would need as many as four more to handle its needs.

The system suffers from minor technical problems about twice a week. But as all important information is stored permanently on computer disc memory, the worst that is likely to happen is the loss of a memorandum

or letter which is being composed when the breakdown occurs.

Human fallibility is potentially a much greater threat. "We have to push our staff constantly to update clients' files. The system can be sabotaged very easily by the staff simply doing nothing," says Mr Blechner.

Star has not decided whether to market its electronic office. But it has supplied one system for a nominal fee to a client in the City of London.



Peter Marchant, sales and marketing director of BL Systems (left), and John Leighfield, managing director, with a terminal

## BL Systems: providing backup for the parent

BRITISH LEYLAND, labouring under heavy losses and acute industrial problems, may seem an unlikely player in the information technology game.

Yet the group has for many years taken a lively interest in developments in business communications and automation and is among the leaders in Britain in applying them to its operations.

Its commitment is symbolised in BL Systems, set up as a separate subsidiary soon after Sir Michael Edwards became BL chairman. It drew together staff and skills previously scattered throughout the group and it now employs 1,100 at its headquarters in Redditch, Worcestershire.

BL Systems' brief is to advise on, develop and operate technologically advanced systems to improve the gathering, treatment and distribution of information for most of the group's activities.

Its formation, according to John Leighfield, its managing director, reflects Sir Michael's conviction that money spent on systems which enhance efficiency is not an overhead but an investment in the future.

BL's involvement in what is now called information technology began before that term was coined and before Sir Michael's appointment. More than 10 years ago it started building its own private microwave radio network, now the biggest of its kind in Britain. It was developed originally to carry closed-circuit television conferences so as to cut the need for business travel in Britain.

The video-conference plan was never realised. But the network is widely used within the group to carry 10m telephone calls a year and data communications traffic between 60 factories and offices, including the BL computer centre.

One of its functions is to relay computerised production schedules to the modern Metro car factory at Longbridge.

BL recently started an electronic mail service on the network. This enables executives to type messages on desk-top terminals and send them to a central electronic "mailbox,"

from which they can be rapidly retrieved by the intended recipients.

It has also acquired the UK marketing rights for the system, which was designed in the U.S., and has started to offer it commercially as a "value-added service" on the British Telecom public network.

The licence for BL's microwave network limits its use to the group's internal communications. Though this has changed as a result of the Government's liberalisation of the telecommunications market, it means that at present it can only operate as a closed loop and cannot be connected to the public telephone system.

BL Systems has also introduced a novel viewdata service, carried on British Telecom circuits, which helps its dealers to locate stocks. By following simple instructions displayed on a television screen, dealers can use the service to search a computerised list of every BL vehicle in stock in Britain.

No more than a minute is

needed to track down the location of a given vehicle, compared with the hours of telephoning that dealers have had to do to locate a model with the particular specifications requested by a customer.

BL Systems functions as a self-contained business, billing other parts of the group for work. Its turnover last year was £38m, nearly all of it derived from within BL. But it wants gradually to widen its range of clients and to increase the proportion of its revenues earned from outside to about 15 per cent of the total.

One of its major recent assignments has been in helping to draw up a strategy for the development of group office automation. Though the completed plan will lay down broad priorities, John Leighfield emphasises that a pragmatic, step-by-step approach will be adopted to put it into effect.

This is essential, he believes, both because much remains to be learned about issues like psychological responses to office

automation and because of the difficulty of predicting the speed of technological advance.

A rigid approach built entirely around technologies which it is practical to apply today could rapidly become obsolete.

Leighfield is not impressed by equipment suppliers who claim to be able to meet the full range of office automation needs. He believes that BL Systems will pursue an eclectic policy, assembling devices and systems supplied by a wide range of manufacturers as its needs dictate.

For an organisation as big as BL it is clearly important to ensure that as much of its equipment as possible is technically compatible. There are now nearly 3,000 terminals of various types in service in the group, including word processors, viewdata sets and electronic mail stations as well as computer terminals. The number is expected to grow to more than 10,000 over the next five years.

BL Systems has helped to devise an advanced equipment procurement procedure. When a major purchase is contemplated it identifies the specifications required. Then a working party is set up to evaluate the equipment available and negotiate with the manufacturers.

Once a machine is selected it is nominated as the standard device for future procurement by different parts of the group. "The procurement policy is not really binding," says Leighfield. "But it has quite a lot of force behind it."

The thoroughness of the procedure means that it is not practical to re-evaluate different categories of equipment more than once every 18 months, which may mean that BL cannot always keep up with every new product introduced to a fast-changing market.

But Leighfield believes that in practice this is a small price to pay. "We think that some penalty is worth while for stability and formality," he says.

## Unilever: taking a lead

ABOUT 15 years ago a group of office automation experts at Unilever were examining ways of increasing typing efficiency when it occurred to them that the primitive and cumbersome electronic typing systems then available could be made much more versatile and convenient if they were fitted with a screen to display text and spell out operating instructions.

No such machine was on sale at the time and none of the six office equipment manufacturers whom Unilever approached thought the idea worth exploring further. So the Anglo-Dutch group decided to go it alone. The outcome was Unicom, claimed to be the world's first display word-processor.

Many equipment manufacturers have since followed Unilever's lead. A steadily growing range of display word-processors is now on the market and advances in technology and intense competition have brought prices down sharply. But Unicom has stood the test of time well and is still widely in use throughout the group.

The development of Unicom was supervised by Unilever International Management Consultants and the success of the system owes much to UIMC's adherence to "what has become one of its cardinal rules for office automation."

This is that equipment must be designed to suit the people who use it every day—not the

engineers and technicians who carried out the technical development work.

To test reactions to the prototype before deciding whether to put it into production, UIMC placed a machine in a conference room and invited secretaries and typists to try it out.

"In less than three months we found that we couldn't keep people away from it," says Mr Tom Elliott, managing director of UIMC. "What was intended as a wine-tasting turned into an orgy."

UIMC functions as a commercial enterprise, accepting assignments from outside clients as well as serving Unilever. It has no power to impose its views on the highly decentralised group, which helps to explain its sensitivity to the attitudes of users. It must rely chiefly on reasoned persuasion, not coercion, to encourage office automation.

Another example of its approach is to be found in a personal computer system which it developed recently. Research by UIMC experts convinced them that many office staff fought shy of computers because they doubted whether they could ever master the complex instructions for operating them.

UIMC's response was to design a powerful small computer which required no knowledge of data-processing jargon or programming techniques, yet could handle quite advanced

tasks like financial planning. Taking an Olivetti machine, they added special programming which makes it almost as easy to use as an electronic calculator.

Although the machines cost £12,000 each, UIMC claims that they can pay for themselves in enhanced efficiency within a year.

UIMC's experts insist, though, that getting people to use machines is only part of the formula for successful office automation. Much depends on how they are used and achieving significant improvements in productivity is affected critically by the way offices are organised.

Productivity can obviously be measured both by the numbers of staff employed and by their output. Unilever is coy about giving detailed statistics of its own operations, though the reorganisation of its London headquarters staff a few years ago tends to confirm UIMC's prescriptions.

Before introducing word-processing equipment typing staff were regrouped into pools and their numbers reduced by natural wastage. As a result, the ratio of typists to staff originating material for typing was raised to 1:20 from 1:6.6. Then, when word-processors had been introduced, the number of typists was further reduced from 100 to 40.

Measured by output, productivity gains from word-processing vary considerably according to the type of work being done. Bigger benefits are attained in the preparation of large numbers of identical documents, like reports, than in composing individual letters.

Unilever reckons that by cutting the time spent correcting errors and inserting amendments, word-processing has raised its typists' output by 250 per cent. But, as Mr Tony Blech, a UIMC consultant, points out, productivity improvements among secretaries with a varied range of duties are likely to be much less spectacular because typing may occupy no more than 20 per cent of their time.

Research shows that as much as 30 per cent of a secretary's time may be spent in waiting for work. More efficient organisation and supervision to ensure a balanced work flow is therefore likely to produce greater benefits than the introduction of word-processing.

Unilever's interest in improving the handling and distribution of information goes beyond the office. Roughly two-thirds of its 350,000 employees working in more than 70 countries are engaged in manufacturing, so factory work ranks high in UIMC's priorities.

"We talk about creating the business of the future, not the office of the future," says Mr David Logan of UIMC.

UIMC aims to reduce as far as possible the amount of manual clerical work done to produce production schedules, keep check of inventories and so on in its factories. In its Port Sunlight plant, for instance, fork-lift truck drivers now consult a computerised system to learn where goods should be stacked instead of waiting for written instructions from a supervisor.

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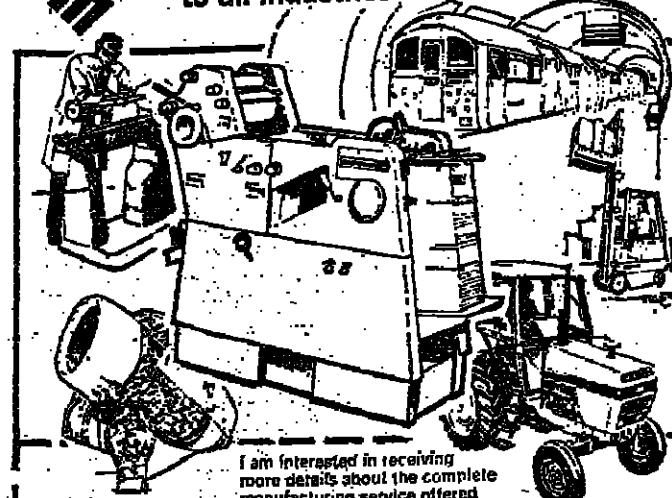
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## OFFICE EQUIPMENT XIV

Although the U.S. continues to lead the way in the information technology revolution, other countries are intensifying their efforts to win further shares in the office equipment market. Here, and on the following page, Financial Times writers examine recent developments in Britain, Japan, France and Germany.

## Whitehall installation aims to set pace for nation

IN A few months' time the selected precincts of 10 Downing Street will be turned into the setting for one of Britain's most advanced experiments in office automation. Cabinet Office staff are to be supplied with communicating desk-top terminals on which they will be able to draft and edit documents, send and receive messages and peruse files of computerised information.

The experiment is one of a series of showcase projects which the Government is sponsoring as part of a programme intended to push Britain into the information technology age. The Industry Department plans to spend almost £100m over the next four years to promote greater awareness of information technology and to support the development of commercially promising new products and systems.

The growth of information technology, which comprises computers, communications and business machines, offers glittering opportunities. The world market is already estimated to be worth more than £50bn, and a recent report by Pactel, commissioned by the National Enterprise Board (now the British Technology Group), forecasts that it will almost double in value to £105bn by 1985.

Britain has been slower than many other industrialised countries, particularly the U.S. and Japan, to wake up to the implications of this boom, however. A survey carried out by Industrial Market Research found that only 3 per cent of business and government establishments owned word-processors, 9 per cent had computers and 2 per cent facsimile machines.

Moreover, British suppliers have been slow to attack even this limited home market. Pactel estimates that UK-owned companies account for only half of the national information technology market. It predicts that, on present trends, their share will slip to 35 per cent by 1990 and that Britain's trade deficit will widen to £1bn from about £300m last year.

Pactel believes that the winners in the future information technology market will be those companies with a record of high profitability, aggressive marketing methods and an international spread of activities focused on clearly defined product sectors.

It concludes that only one British company, Recal, comes close to satisfying these criteria. Recal's strengths, however, are chiefly in data and defence communications.

Pactel observes that Britain has no world-class suppliers of office automation, including small business systems, copiers, facsimile machines or a complete range of word processors. These deficiencies are in

contrast to the broad product lines offered by U.S. multinationals like International Business Machines and Xerox and the success achieved by smaller American companies in particular sectors, such as Wang in word-processing and Digital Equipment in minicomputers.

Moreover, Japanese companies are expected to provide increasingly stiff competition in information technology in the next few years.

ICL, Britain's biggest computer company, has clearly recognised the need to compete more aggressively in these markets. After being on the edge of financial catastrophe earlier this year, it is now seeking to broaden and modernise its product range. Its new managing director, Mr Robb Wilmut, has identified office automation as a major target for future strategy.

## BRITAIN

GUY DE JONQUERES

The company's own financial resources are limited, but it has a valuable asset in its extensive international marketing network. Mr Wilmut is seeking to start collaborative ventures with companies which have developed technologically interesting products but need new outlets for them on the world market.

ICL has already concluded one deal with Three Rivers, a small American company, and will manufacture and market in much of the world its Perq microcomputer. The British company has also been having talks with a number of other manufacturers in the U.S., Europe and Japan and is believed to be close to an agreement with Fujitsu, the large Japanese electronics concern, on a joint venture.

The history of ICL is itself symptomatic of some of the weaknesses which have afflicted Britain's electronic high-technology industries more generally. It does not lack talented engineers and has an able research and development team. Its Content Addressable File Store, which speeds up the retrieval of computerised data, and Distributed Array Processor, which boosts the power of a mainframe computer, are both ingenious and innovative products.

But the company has not always moved quickly enough to turn its technology into commercially successful products. It continued to devote a large share of its resources to big computers after it had become clear that much of the industry's future growth would be from sales of small machines; and it was one of the last big manufacturers in the field to

announce a formal system for computer networking.

As Pactel points out, one of Britain's best hopes for competing internationally in information technology lies in telecommunications. The national telecommunications network, the third largest in the world, and Britain is the communications hub for many U.S. multinationals operating in Europe.

Britain is acknowledged to be among the world leaders in the development of fibre optics, which enable speech and data to be transmitted at high speed along half-inch strands in the form of pulses of light.

System X, electronic exchange, is technically well-regarded—though prospects for sizeable export sales remain uncertain—and Britain also has advanced skills in the design and manufacture of satellite communications systems.

But British strengths in some of these areas owe more to initiatives by the public sector than to private enterprise. Much of the pioneering work in optical fibres has been undertaken by British Telecom, which has also carried most of the development cost of System X.

British Telecom, moreover, was responsible for the development of the advanced small FALX, the Monarch, now being manufactured for it by the General Electric Company and Plessey.

One of the Government's aims in opening telecommunications to competition is to stimulate greater private-sector initiative. It hopes that ending of British Telecom's monopoly will lead to the production of a wider variety of technologically advanced equipment and to a flourishing market for new types of networked services such as electronic mailing.

The speed at which the liberalisation is implemented will be largely determined by the Industry Department. It will undoubtedly seek to avoid a sizeable influx of imported

equipment at the expense of UK manufacturers and will also keep a close eye on the impact of freer competition on the finances of British Telecom, whose borrowing programme is to be restricted by the Government.

Nonetheless, that prospect of freer competition has already aroused private-sector interest. The biggest project announced so far is for an independent business communications network. It is being developed by a consortium composed of Cable and Wireless—in which the Government is offering a 50 per cent stake to private investors—British Petroleum and Barclay Merchant Bank.

Balancing the industry's participation in the network is its public support for the application and development of electronic technology. It was designated 1982 as Information Technology Year and is budgeting about £80m for programmes to enhance general awareness of information technology through seminars and exhibitions and to fund specific projects.

The Department also plans to spend up to £20m on a series of identification projects, of which the Downing Street office automation experiment is one. Much of the money seems likely to go to smaller British companies with bright ideas, though some funding is also going towards a system supplied to Cambridgeshire County Council by IBM.

The underlying philosophy behind the Department's actions seems to be that by publicising information technology and scattering seed money it will encourage a positive response from the private sector.

Whether that response will be energetic enough to make good Britain's slowness in the international race towards the information age remains to be seen.



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## Manufacturers moving into battle

JAPAN, so devoted to promoting industrial productivity in recent years, has now turned its attention to office automation after lagging three to five years behind the U.S. in this field.

Now Japanese manufacturers are preparing to battle for the market in new office equipment, which is expected to reach ¥3,676,500m (\$16.7bn) in 1985 and ¥5,389,500m (\$24.5bn) in 1990.

Mr Akio Tamura, manager of the office automation systems divisions at Hitachi, believes that the annual growth in office automation will be 20 to 25 per cent in the next few years. Other experts are not quite so optimistic and predict annual growth at around 15 per cent over the next five years.

Hitachi is one of the leading electronics companies that have set up a new division just to handle the strategic planning for marketing office machines.

The division was established in August last year to co-ordinate systems engineering, while a new information systems sales division will co-ordinate the work of the divisions manufacturing small office computers, facsimile machines, word-processors and communications equipment.

The Matsushita group has built a new National OA centre in the heart of the Tokyo business district, where small business computers, optical character readers (OCR), word-processors, facsimile machines, electronic cash registers (ECR), and point-of-sale (POS) machines are demonstrated.

Nippon Electric has established its C and G Office System to improve the efficiency of office work. Nippon has not set up a new division but has a system planning office which co-ordinates the activities of the business systems division and

the public systems division. Toshiba has set up an OA division for strategic planning, systems engineering and sales assistance to its other manufacturing divisions making computers, copiers and other equipment.

All these companies are using their thousands of retail outlets for selling office equipment. Some, like Matsushita, Toshiba and Mitsubishi, are opening showrooms in major cities.

Other large companies engaged in the battle include Mitsubishi and Fujitsu, which make computers. Companies like Sharp and Sanyo, better-known in the home electronics and television field, are also establishing OA outlets. Copier specialists like Ricoh and Canon are also in the battle. Along with their copying machines they have added facsimiles, word-processors and even micro-processors to their range of products.

Word-processors have led the way in the U.S. and Europe for office automation. But in Japan the development of word-processors was delayed by the intricacies of the Japanese written language, which uses thousands of characters mainly of Chinese origin.

Toshiba marketed the first word-processor capable of handling Japanese characters in September 1978. It was followed by Sharp, Nippon, Fujitsu and Oki.

Sales of word-processors in Japan began in earnest last year. Shipments totalled about 3,000 units and the estimate for the current fiscal year (to March 1982) is estimated at 2,000 units. The Japan Business Machine Makers' Association predicts that sales of word-processors will reach ¥50bn (\$227m) in 1985 and ¥150bn (\$662m) in 1990.

In Japan it is not easy to distinguish between small busi-

ness computers and "personal" computers, but it is generally accepted that any computer that sells for less than ¥3m (\$14,000) is a "personal" computer.

There are no 1980 figures for small office computers but shipments in the fiscal year 1979

## JAPAN

JOHN FUJII

totalled 20,328 units valued at ¥146bn (\$659m). Sales growth last year is estimated to have been about 30 per cent.

There are 26 Japanese manufacturers and importers making or selling personal and small business computers.

The remarkable growth of the facsimile machine market in Japan has followed the opening of telephone lines for general facsimile use in 1972. Use of facsimile communications has been widespread because it permits the transmission of original manuscripts in Japanese characters.

Ministry of International Trade (MITI) statistics show that the production of facsimiles last year totalled 100,375 units valued at ¥81bn (\$366m).

Facsimile exports last year were ¥15bn (\$66m). The relatively small volume of exports is attributed to heavy domestic demand. Matsushita—Graphics Communication Systems is the leading facsimile manufacturer in Japan, followed by Ricoh, Nippon and Toshiba. Hitachi, Sanyo and Canon are also among the 26 "fac" manufacturers.

But the biggest segment of the office equipment market in Japan is represented by copiers. Japanese production last year totalled 1,123,720 units valued at ¥336.7bn (\$15bn). Copier exports last year reached

¥228.8bn (\$10bn), which represented 66 per cent of the total output.

Japanese companies have the lead in the world ppc (plain paper copier) market previously dominated by Xerox. In 1979 the Japan Business Machine Makers' Association claimed that Japan's share of the world ppc market was 79 per cent.

While Japan has been dominant in the low-end copier market (fewer than 50 copies per minute), the latest trade reports indicate that Japanese manufacturers are now entering the high-speed market (60 copies per minute), which had been considered almost exclusively the preserve of Xerox.

Other important developments in office automation are voice recognition and the expansion of inter-office communications. Nippon Electric has introduced a "decision system" equipped with individual TV display units, an overhead screen, projection cameras and telephones. These can be supplied to meet the particular requirements of users, says Nippon.

Nippon Electric buys the furniture needed for its "decision room," but furniture companies such as Okamura are responding by offering office equipment with the latest office machines.

Although industrial automation is extremely advanced in Japan, the competition in the Japanese language and relatively inexpensive manual labour for office work has put a brake on office automation.

However, Tokyo investment and magazines are now publishing the potential benefits of office automation to the extent that "OA" is rapidly becoming a vogue word in the Japanese business community.

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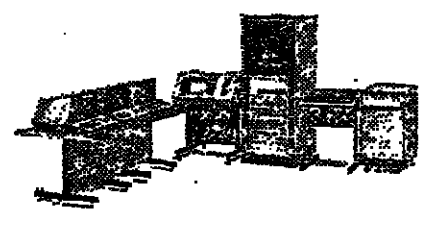
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## OFFICE EQUIPMENT XV



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## More active role sought in the market

THE FRENCH office equipment industry looks set to be a major beneficiary of the new Government's economic strategy. Under the Mitterrand plan, attempts to refuel the economy should help accelerate an already firmly established programme aimed at upgrading the technology and widening the markets of the French office electronics industry.

Like all major Western European countries, France is keen to play a more active role in the rapidly expanding world market for sophisticated electronic office equipment. Its industrial policy makers are determined to build up an effective manufacturing base from which to strike back at foreign competition. French industry controls barely a tenth of the domestic market for office electronics which, says the Industry Ministry, is far too small.

The thrust for change is coming on a number of different levels. One priority is the modernisation of the state-owned telephone system. Another is the way the state continues to mould a number of private sector companies into major international groupings. Their impending nationalisation should accelerate this process.

Until recently, the French telecommunications body, the PTT, was one of the most inefficient in Europe. It is now spending heavily on new capital equipment and its progress over the past five years in laying down new subscriber lines has been impressive. Capital spending is currently running very high and the PTT plans to double new subscriber installations by the beginning of the next decade.

By then, France should have more digital exchange lines in service than any other country in Europe, providing a system capable of carrying computerised data as well as conventional voice communication. Updating on this scale is creating work for the switchgear

40 per cent after 1984.

CIT is itself hopeful of a recovery this year having seen earnings slide by more than half to FF16m in 1980. Among other factors it blamed development and modernisation costs, but said that sales for 1981 were expected to grow by 20 per cent and was confident of an upturn in profits.

The impending nationalisation of CIT's parent company appears in no way to obstruct a successful conclusion of the deal with Lynch. In contrast, French Government policies recently forced Thomson-CSF, the computers arm of the Thomson-Brandt the leading electronics and electrical consumer goods group in France, to abandon plans to set up a major telecommunications venture in the U.S.

Earlier this year, CSF was all set to link-up with Continental Telephone of the U.S. in a major distribution venture which would have given the French group an important stake in the North American market for sophisticated business information systems.

Co-operation between the two companies was also to have led to the formation of joint research and manufacturing facilities. The deal was widely seen as a breakthrough for CSF and an important step in its drive to become a major force in world computer markets. The failure of the deal to survive France's nationalisation plans is seen as a major blow to the company. CSF already has a number of sizeable development and distribution agreements with U.S. groups.

The deal will give Lynch, which recently abandoned plans to develop its own digital equipment, access to improved technology since CIT has adapted its E10 electronic switching gear to the demands of the U.S. market. For its part, CIT plugs-in to a ready-made distribution network. Lynch returned to modest profits for the early quarters of 1981, and CIT has the option to increase its shareholding to

## FRANCE

JEFFREY BROWN

## Important changes now taking place

THE OFFICE equipment industry in West Germany is in quiet ferment. For the moment, a number of management cards are being played close to the chest, but few people would deny that certain key structural changes are taking place. Large blocks of shares have changed hands, and at least one major new manufacturing grouping has begun to take shape.

The shift in industry make-up, perceptible for some time, has gathered pace this year. There are many inter-related reasons for the movement, but the two central causes are rapid technological advance and the need to fend off foreign competition. Against this trading background, there is a compelling need among manufacturers to find additional sources of finance. Other companies see the chance to expand.

Weighed down with debt inherited from past trading mistakes, AEG-Telefunken has continued to dispose of large chunks of its business, notably a controlling (83 per cent) interest in Hartman and Braun, the control and measuring equipment maker. This was purchased by Mannesmann, the pipes and engineering group which is rapidly diversifying into electronics and which recently purchased a half share in the family-owned small business machines group, Kienzle.

Along with the automotive component group, Robert Bosch, AEG and Mannesmann are attempting to create a major new German telecommunications and office equipment group. It is early days yet, but the three companies expect to make their plans known before the end of this year.

As befits the strongest economy within the EEC, the German market for sophisticated electronic equipment is the biggest in Europe. After rapid growth in recent years, some product sectors show signs of pausing for breath in 1981, notably photo-copiers and typewriters. But the market as a whole, fuelled by continued expansion in small enterprises, is expected to recover sharply from next year onwards.

writers the numbers on foreign domination make even more depressing reading for the men running the production lines at Olympia and Triumph-Adler.

Upheavals in the typewriter market are one of the more obvious areas of structural shift in Germany's office equipment industry. The major makers have tended to be slow in adapting to the electronic age, and have lately had to scramble to switch output as demand for mechanical products has fallen away.

Both Olympia and Triumph-Adler have been caught napping. For its parent company, AEG, the problems at Olympia have been an added thorn in the side at a time when the group balance-sheet is being severely stretched by the prolonged period of high interest rates. Losses at Olympia are said to have come close to DM 150m in 1980. The company is seeking aid from the Government, and at the same time radically streamlining its work-force.

Triumph-Adler, which is part of the Volkswagen motor group, is heading for losses of around DM 10m this year and is also cutting back production and reducing its workforce. The situation at Triumph-Adler, which apart from typewriters makes a wide range of computers, copiers and calculators, represents a major setback for its new owners. Purchased in 1979, Triumph-Adler was VW's first major diversification outside the motor industry.

The leading office equipment manufacturer in Germany, and the company with most pretensions to international standing in the world of business machines, is Siemens which, as an electronics company, ranks as number two (after Philips) in Europe and number five in the world. It has a very successful earnings record, and is a major exporter, shipping something like two-fifths of production outside Germany.

Compared to its power

engineering and telecommunications business, Siemens' computer operations are relatively modest, accounting for little more than a tenth of group sales. But this side of Siemens is fast expanding. Spending is high, topping 30 per cent of sales last year. It is still losing money in some areas, but the data-processing operations have been in the black for more than two years.

Along with a number of European producers, Siemens has strong ties with Japan, notably through an agreement to import central computer units from Fujitsu.

In return, Fujitsu plugs in to Siemens' peripheral equipment, mostly laser printers, and the two companies have also agreed to exchange know-how in software systems. Siemens has a 10 per cent shareholding in Fujitsu's parent company, Fuji Electric.

A comparatively recent feature of the trend for German companies to tune into Japanese technology has been BASF's links with Hitachi allowing the Japanese group to market under the BASF label. BASF—one of the big three chemical groups in Germany—has excellent credentials in peripherals and media supplies, and it aims eventually to become a major computer systems supplier. It already has a foothold in the personal computer markets in Germany and North America.

In contrast, Nixdorf, the family controlled small computers group, is much more independently minded, although just how long it will continue to operate without access to major external finance is a constant guessing game in German computer circles. Sales last year continued to power ahead, but profits fell sharply, tumbling by more than half to DM 42.3m after tax, not helped by major credits to leasing reserves.

Nixdorf is a rarity among European computer manufacturers. It has some enviable market shares, it makes money and it is independent. Lately it has been spending heavily on new product development, designed to extend its range into larger computers and communications systems for computer networks. All of this makes its planned stock market debut—sometime "within the next three years"—look a rapidly approaching necessity.

Lucrative Government defence contracts may have fostered

CSF's progress in recent years, but at least the company has been mostly self-financing. Cii-Honeywell Bull has long been a heavy drain on state funds, and has recently been forced to ask for fresh aid.

The company is now part of the Saint Gobain industrial group which moved into Cii in 1980 and is now busily expanding Cii's office equipment operations.

Saint Gobain acquired a 57 per cent controlling shareholding in Cii last year, and has quickly moved to consolidate its interest in the computer and data processing industry. It has forged financial links with Olivetti of Italy and has taken part—together with Olivetti—in the rescue of the leading

French mini-computer company, Logabax.

It remains to be seen just how successful Saint Gobain will be in threading its various interests into a coherent strategy. But it clearly has the tacit approval of the French Government to get things moving. It also remains unclear how Honeywell of the U.S., which owns the outstanding 47 per cent of Cii, will react to having a more activist partner.

Honeywell relies on Cii for its operations in every European country, except Britain and Italy. In theory, it should welcome any moves to bolster Cii's flagging finances. Cii's first half 1981 losses deepened. But a number of potential conflicts of interest could also be looming. Olivetti recently concluded a deal to market Japanese hardware in Europe

in direct competition with Honeywell.

One of the faster growing high technology companies in France in recent years has been Matra whose large defence interests are to be taken over under the state nationalisation plans. Matra's main thrust at present is electronics. The company has a key role in the Government's strategy for the French components industry, and to this end has recently agreed important links with the U.S. computer group, Intel.

This summer, Matra signed an outline agreement that looks likely to increase its commitment to micro-computers. It is to make small business machines for the U.S. company Tandy, which claims to be the biggest retailer of consumer electronics in North America.

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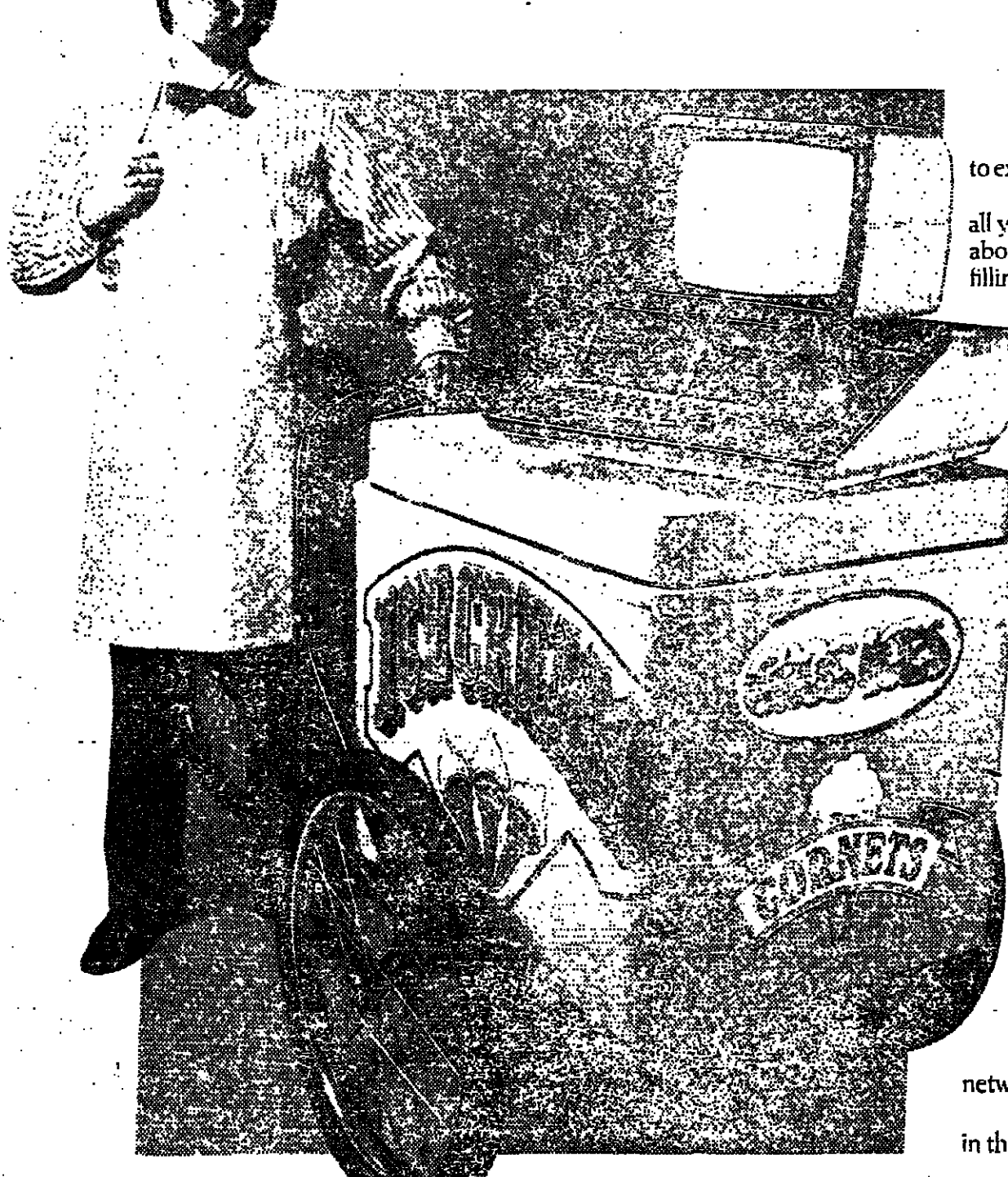
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## Making sales in the High Street

THE REVOLUTION in technology that is so rapidly changing the office world in the 1980s has also brought about significant changes in the marketing of office equipment.

As the price of new office products has fallen—a result of the development in microprocessor technology—the proportion allocated to marketing is obviously under pressure. Yet, at the same time, the market for office equipment has become even more competitive, and companies have had to pay greater attention to marketing methods than before.

Mr. Jim Foster, a marketing manager with IBM, agrees that "the cost of marketing the product is critical." Yet he points out that "in developing the most economical and cost to the user, it is vital that our marketing is still effective and does not detract from the high service standards we set ourselves."

The traditional area of marketing most under threat is the salesman's direct selling technique. Office equipment companies are no different from other major manufacturers in finding that the cost of running a sales team—a salesman costs at least double his salary to operate—is becoming too high. Increasingly, companies are concentrating on a few highly motivated and successful salesmen to concentrate on the large accounts, using a network of dealers to meet the mass market.

Without doubt the major marketing development in the past few years has been the advent of retail outlets where interested business buyers can simply walk in from the High Street. IBM, Rank Xerox, and others are all busily expanding into this area.

Rank Xerox, which already has three stores open in Central London and one in Slough, estimates that there is a mass market waiting to be exploited with electronic office equipment. It says that there are over 500,000 companies in the UK employing fewer than 30 people who, in normal circumstances, would not be reached by the marketing methods of the manufacturers.

Rank's market research suggests that electronic office equipment is also suitable for a range of professions not normally considered by office equipment companies. For

example, the research revealed that doctors, dentists, lawyers, estate agents, architects, and travel agents could all be typical customers.

In many companies and small offices, the basic office equipment has not changed for decades despite the technological developments that have been made. Attitudes are only just beginning to change in the small to medium-sized business which still relies on short-hand for letters, slowly typed invoices, hand-written ledgers for cash flow and crude communication devices. A typical office worker will be supported

### MARKETING DAVID CHURCHILL

by only £2,000 of equipment, while a counterpart in manufacturing industry will have the benefit of more than £10,000 worth of equipment per person.

Rank Xerox says that it expects retail distribution outlets "to be very cost effective." The company adds that the stores "reduce our overall costs for the distribution and production of our lower-priced products, and these economies benefit our customers as well."

Rank sees range and convenience as the retail outlet's two main attractions—everything from calculators to computers are sold, and not only Rank's own products. Like other High Street shops, the Xerox stores run promotions and special offers, and its products are available on through cash and carry or by delivery. Financing is available, and major credit cards are also accepted.

IBM has two retail centres operating in central London and a third is planned before the end of the year. Mr. John Radosky, IBM's retail development manager, says that "retail centres represent a national extension of our marketing effort and help provide customers with a convenient way to try out and buy the products and services we offer."

Another business equipment retail outlet recently opened in central London is operated by BEAM, a subsidiary of the UAC

International Group which is itself part of Unilever. This retail outlet is the tenth UK business centre operated by BEAM and further centres are planned.

Retail outlets still remain very much in their infancy in the UK however. A more traditional method of marketing office equipment is through exhibitions and the International Business Show at the National Exhibition Centre, Birmingham, next week will provide one of the most comprehensive displays of business equipment ever assembled in the UK. The show will have over 470 exhibitors occupying some 40,000 square metres of stand space.

Mr. Lawrence Lewis, chairman of the advisory committee of the Business Equipment Trade Association, says that the exhibition "has been supported by a massive publicity campaign over the past year, comprising media, direct mail, and overseas publicity." He adds that the exhibition will be supported by local and national radio and television coverage.

Press and television advertising of office equipment has also increased considerably in recent years. The National Business Equipment Survey's "advertising expenditure analysis" shows that total 1980 advertising expenditure on business equipment reached £3m. Copier advertising accounted for over half of this sum, which emphasises the aggressive competition in this market.

Typewriter advertising also rose sharply towards the end of last year, according to the survey. This was due to heavy advertising for electronic typewriters at this time, especially by Olivetti and Olympia.

IBM has recently been running a series of regional television commercials and a direct mail campaign using the theme "IBM small computers can turn paperwork into information." The campaign is aimed at promoting the System 23 business computer.

A sign of the increasing aggressiveness of companies like IBM in the business equipment market was a recent offer of IBM's correcting Selectric 111 typewriter for a 30-day free trial without obligation to buy. Only a few years ago, such an offer from IBM would have been virtually impossible to contemplate.



A second office products retail centre has been opened in London by IBM. The centre at Cheapside has 1,100 sq ft of sales and demonstration space

## End of the line for the tea trolley

ONE OF the more useful items of office equipment for improving productivity levels—the food or drink vending machine—is also one of the most frequently overlooked.

They are usually taken for granted in offices—yet companies which site machines in the right place, offer the right combination of food, drinks, and other items, and subsidise the price, can make valuable contributions to staff productivity.

For example, the growth of flexible working hours and continuous-shift working—especially in company installations—has made it impossible to meet staff demands for refreshments from normal catering services.

The provision of increasingly advanced vending machines, including those offering instant hot food or snacks, can be a cost-effective way of ensuring that staff remain refreshed and reasonably well-fed while working unsocial hours.

The recession is forcing many companies to re-consider their conventional catering facilities while the tea trolley and her trolley are increasingly giving way to vending machines.

One indictment of vending machines, however, is the fact that most people prefer to drink coffee from a machine rather than tea, even though more tea than coffee is drunk at home. Tea trolleys serving both tea

and coffee usually find that tea is preferred.

This reflects the fact that many consumers still regard the flavour of hot drinks from vending machines to be unsatisfactory. A recent development in the industry has been the introduction of "in-cup" beverages, whereby the ingredients are put into each cup before it leaves the factory and the machine merely places the cup and fills it with hot or cold water.

Cups for this system have ridges which maintain them in interlocking stacks for simple insertion into the machine.

### VENDING EQUIPMENT

DAVID CHURCHILL

This system is generally agreed to provide a better-flavoured beverage of more consistent quality. It is also the fastest-growing part of the beverage vending market and now accounts for about one-third of all machine-vended drinks.

Market estimates suggest that within the next few years this proportion will reach 50 per cent of drink sales.

It is estimated that an average employee will want at least two hot or cold drinks a day, one in the morning and one in the afternoon, although it naturally varies according to working conditions. Analysis has shown that to gain the maximum productivity benefits, a machine should be situated not more than 30 yards from an employee's desk or workbench.

While beverage machines are the most common type to be found in offices, some employers are turning to food vending machines to provide a more comprehensive food service to their staff. A recent innovation is the hot-meal machine, often installed with a microwave oven. Another is the "ring-pull" can containing hot food.

Although many employees have for some time provided cigarette and confectionery machines, many others are now installing machines selling such things as magazines or tights. They are likely to be appreciated by women employees, in particular, in places where local shopping facilities are limited.

Many operators predict that while the demand for food and drink vending machines will continue to increase—especially when the recession is over—the greatest growth area in the late 1980s will be "automatic shopping" facilities.



Today's increasing range of food and drink vending equipment can make a valuable contribution to improvements in staff productivity. Above: Mercantile Catering Services Golden Service vending units installed at the British Airports Authority's cargo centre. On the left is Mr Robert White, managing director of MCS, with Mr Peter Hughes, BAA's premises manager

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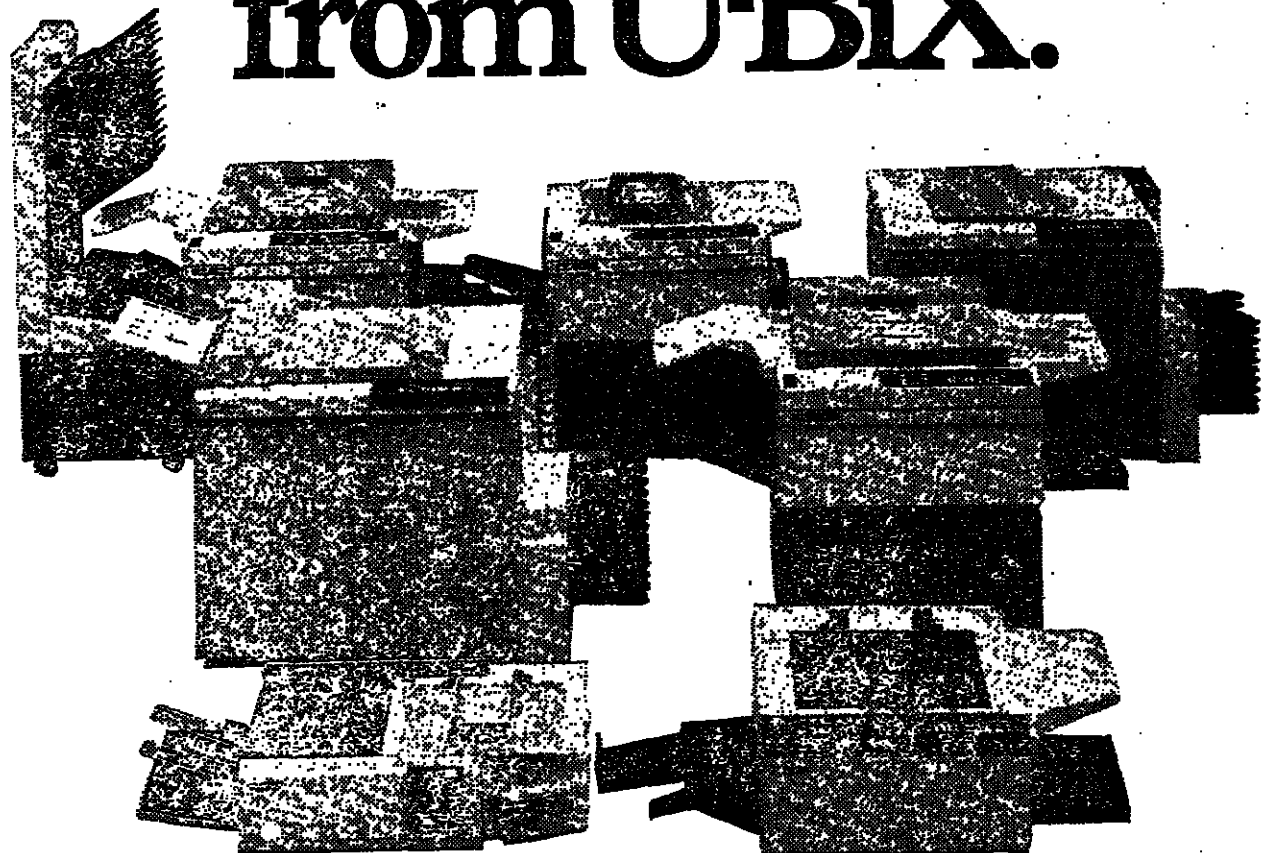
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## OFFICE EQUIPMENT XVIII

### Increasing market potential for hand-held machines

ALTHOUGH Philips firmly remains the UK market leader in dictation equipment, one interesting development is the way that Dictaphone—with its strong emphasis on the centralised systems sector—has moved to second place in the market league table, ahead of Grundig.

The dictation equipment market is broadly divided into three main categories—the central dictation network systems, mainly used by larger companies; secondly, the table-top machines; and thirdly, the hand-held (or pocket-size) range.

In the general marketplace, Grundig is steadily regaining lost ground—in 1972, the company commanded 48 per cent of the market—but this later dropped as low as 17 per cent. Today it has around 20 per cent, according to the National Business Equipment Survey.

Sales figure estimates by NEBS for desk-top machines, combining recording and transcription facilities, totalled 34,400 in 1980, while models for transcription only totalled 20,600.

In the portable machine sector, sales were around 72,300 and the figure for centralised network systems was 680 last year.

Philips commands 62 per cent of the table-top machine sector, followed by Grundig with 19 per cent; Sony, with 4 per cent; Olympia, 4 per cent; and IBM, with 3 per cent.

Manufacturers report a growing demand for smaller, more compact machines in both the table-top and hand-held ranges.

Philips suggest that while the

total dictation market remained static last year, it is likely to expand steadily by some 25 per cent by 1983. The company is encouraged by the reception for its recently-launched 812 dictation and transcription machines, which incorporate new, lightweight headphones and a redesigned foot-pedal system, giving the

potential for growth, according to NEBS, is in the hand-held machine sector—the convenience factor as well as falling prices in the face of competition accounts for the growing popularity of these "electronic notepads".

Philips again tops the market share table with 67 per cent, but is facing increasing competition from Japanese manufacturers. Grundig commands a 16 per cent share, while Sony has 9 per cent and Dictaphone around 5 per cent.

Advertising expenditure analysis indicates that the pocket machine war is heating up, with Philips and Grundig, in particular, launching strong campaigns, according to Jackie Arthey of NEBS.

One product, the Olympus Pearlcor, was the subject of an £80,000 campaign in the first quarter of this year in the national Press—a period that is, traditionally, relatively quiet for such promotions in this sector.

In the more profitable centralised systems market, Dictaphone leads with a 62 per cent share, followed by Assman, with 16 per cent, and Philips, 12 per cent. Although Dictaphone has a strong hold on this sector, Sony machines are moving steadily into the market—another indication that Japanese manufacturers are intent on winning a far stronger share of the dictation equipment market.

Although Dictaphone's main product-line is still desk-top units and portables, the company—which had a record year in 1980—has consolidated its position in the centralised systems market with equipment such as the 295 standard

cassette system which, with four machine units, for example, self-expands from about 25,000 to 100,000 words.

On average, each machine unit in the system has a capacity of 100,000 words. The overall system capacity—thus, a 400,000 word system—can serve from 20 to 25 dictators. Transcription units for this equipment would normally be leased on a "loan" basis.

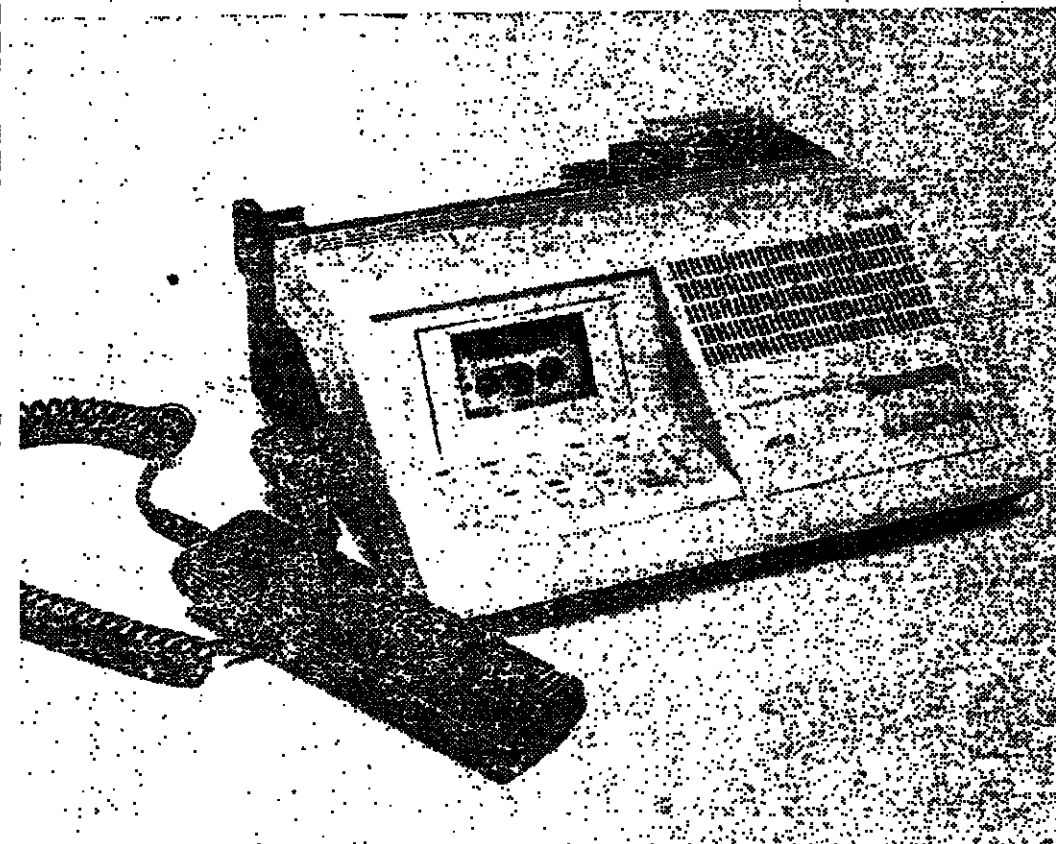
Such systems, using Dictaphone, offer greater accuracy and faster working. The 193 closed-loop system, for example, allows a dictating unit to start transcribing 20 seconds after the author begins dictating—a turn-around time on letters of 30 minutes is not unusual.

Britain's biggest centralised dictation system, of 28 units, was recently installed by Dictaphone at Durham County Council.

Rapid, easy-to-use, electronic indexing systems, now being introduced by various manufacturers, are proving popular with machine users. These indexing facilities not only indicate the amount of work on each tape, but also mark the end of each letter and provide special instructions for the typist, prior to transcription.

Another significant aspect of today's rather fragmented market is that users are demanding continuity of supply and more efficient back-up services—and it is in these areas that companies such as Philips and Grundig are particularly strong, according to Mr Christopher Adams of the long-established Dictating Machine Centre in London.

THE latest addition to the range of desk-top dictation machines from Philips Business Equipment is the system 800 (left) which incorporates advanced features resulting from the company's research programme. System 800 is fully compatible with other Philips dictation products using the Mini-cassette 2, with the visual mark-and-find facility. The 812 is a dual-purpose unit, for dictation or transcription, according to the accessories chosen. The hand-microphone allows the dictator complete control of the unit; the system includes lightweight, adjustable headphones. A microprocessor carries out 160 performance checks per second on all the 812's functions, ensuring greater reliability.



### Demand for more flexibility in office locations

THE BIGGEST influence on office building and design in the 1980s will undoubtedly be the impact of new technology which is so rapidly changing the face of office equipment in general.

The impact of the microprocessor can clearly be seen, for example, in the out-moded need for large computer halls which were the vogue in the 1960s and early 70s.

Office planners at that time could not foresee the rapid miniaturisation of computer technology, which has left small mini-computers and terminals—with the same computing power as the early generation of computers—virtually stranded in offices that are too large.

But the impact of technology is being felt in numerous other and more subtle ways. The increased use of visual display units, for example, has meant that lighting systems have to be specially adjusted to cope with the different levels of light emitted. The need for more power sources, moreover, for modern word processing systems has also created the need to blend heavy duty cables into the office environment.

Noise levels can also change, for instance, by the introduction of word processors which can be quieter than ordinary electric typewriters. Less noise from machines, therefore, makes it equally important that the acoustic systems are compensated to account for the relative increase in noise from other sources.

New technology will also have the effect of changing the way in which offices are used. The development of new communication systems, for example, will make it less essential to have large groups of office workers in one place. Such dispersal has already taken place to a limited

extent over the past decades, with computer facilities often located outside London and other major cities.

But it is already feasible to relocate other functions, such as the accounts department, which can easily be linked by sophisticated telecommunication systems.

Mr Roger Henderson, managing director of the Space Planning Services design consultancy, believes that the impact of new technology will help bring about the demise of the large corporate headquarters occupied by a single tenant. "Many buildings will be occupied by multiple tenants—small nuclear headquarters, with groups of professional and technical staff, many related to service industries rather than manufacturing, and perhaps all being served by a data network or data ring main."

Yet Mr Henderson does not believe the argument that in a decade or so the office as we know it today will be a thing of the past.

"Whatever happens," he says, "there will still be a genuine need for face-to-face communication and human contact. In ten years we shall not all be working from home using the electronic gadgetry of which so much is written and spoken, but actual office tasks will be performed in vastly different ways."

Yet in some ways the office of the future will largely be shaped by decisions taken many years ago when many offices in use today were built. In the 1960s, for example, the speculative office building boom led to a spate of offices which were solely aimed at maximising rentals per square foot rather than being built to maximise office efficiency.

Such offices, combined with

the desire of architects and office planners of forcing the open-plan office landscapes upon unfortunate office workers, has probably done more harm to office productivity over the past two decades than any other factor.

Offices without walls have been shown by several studies not to be the panacea they were once thought to be. Nowadays, the design trend is to create individual work-stations, to provide privacy where needed, but

also to create space for group activities. Modern methods of working often require project teams to be set up and disbanded to meet fluctuating work-loads. This requires an environment with a high level of flexibility, a quality which many of the speculatively designed offices of the 1960s do not possess.

Space Planning Services and other design consultancies are particularly conscious of the need for flexibility in refurbishing existing offices and planning new ones. "Flexibility means allowing for spaces large enough for alternative uses, shallow suspended floors for services cabling, and being able to change the physical environment—lighting, heating, cooling, ventilation and so on—at the will of the occupant," points out Roger Henderson.

"It also means creating offices which are capable of being self-contained and, with electronic security systems, make multiple

tenancies an acceptable commercial proposition."

Apart from new technology, the other major influence on office buildings and design over the past decade has been the impact of rising energy costs. In the 50s, 60s, and early 70s, the relative cheapness of energy led architects and developers to build buildings with glass walls and poorly insulated roofs which were high users of energy.

A new computerised method of assessing fuel consumption in buildings being designed has recently been put forward by the Royal Institute of British Architects. The system was designed by the Institute's energy group in conjunction with the gas, oil, coal, and electricity industries. The Chartered Institution of Building Services and the Departments of Energy and Environment were also involved.

With the aid of a microprocessor, the system will be able to quickly and easily assess the energy consequences of possible designs. RIBA points out that an estimated 50 per cent of all energy consumed in Britain was for heating, lighting, air-conditioning, and servicing buildings, and that about £40m a year. Assuming 30 per cent savings by better energy design and management, the savings could be about £12m a year.

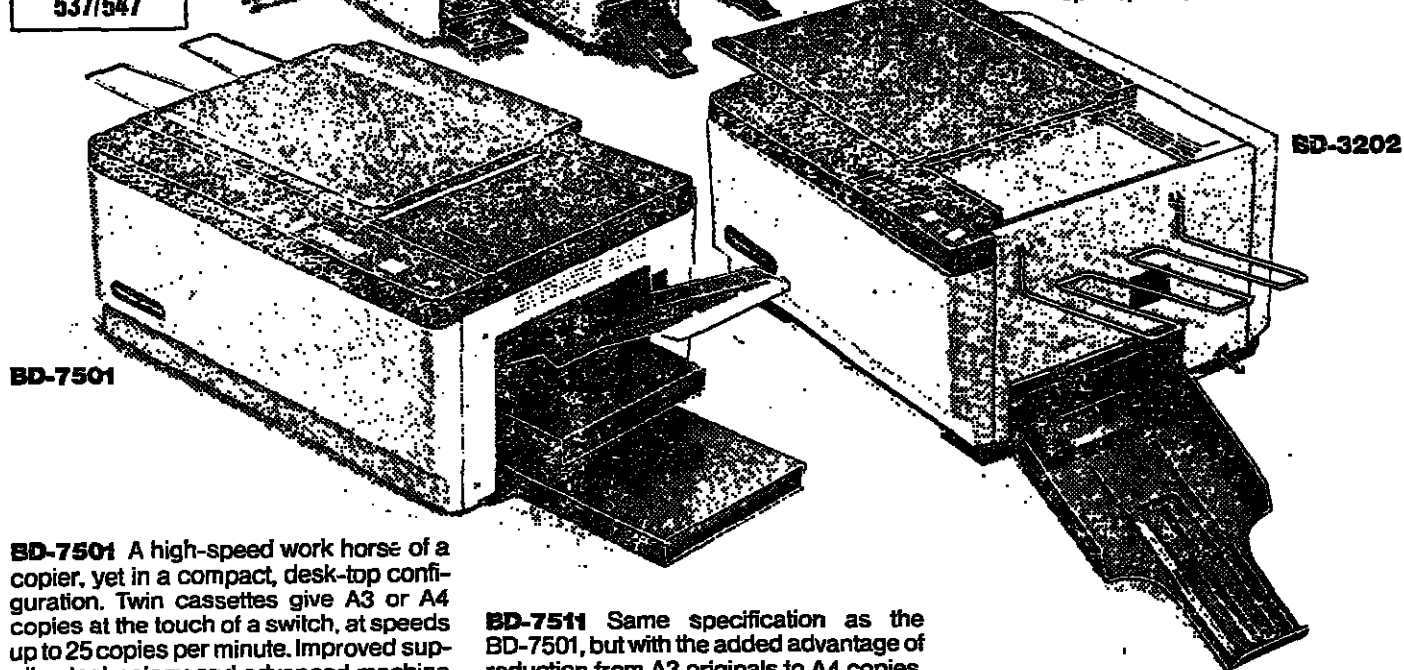
Yet the increased attention paid to energy conservation measures in buildings in recent years masks the fact that the most important cost in any office is the people who work in it. Perhaps the 1980s will, after all, be remembered as the decade in which the staff who work in offices became the first priority of the planners.

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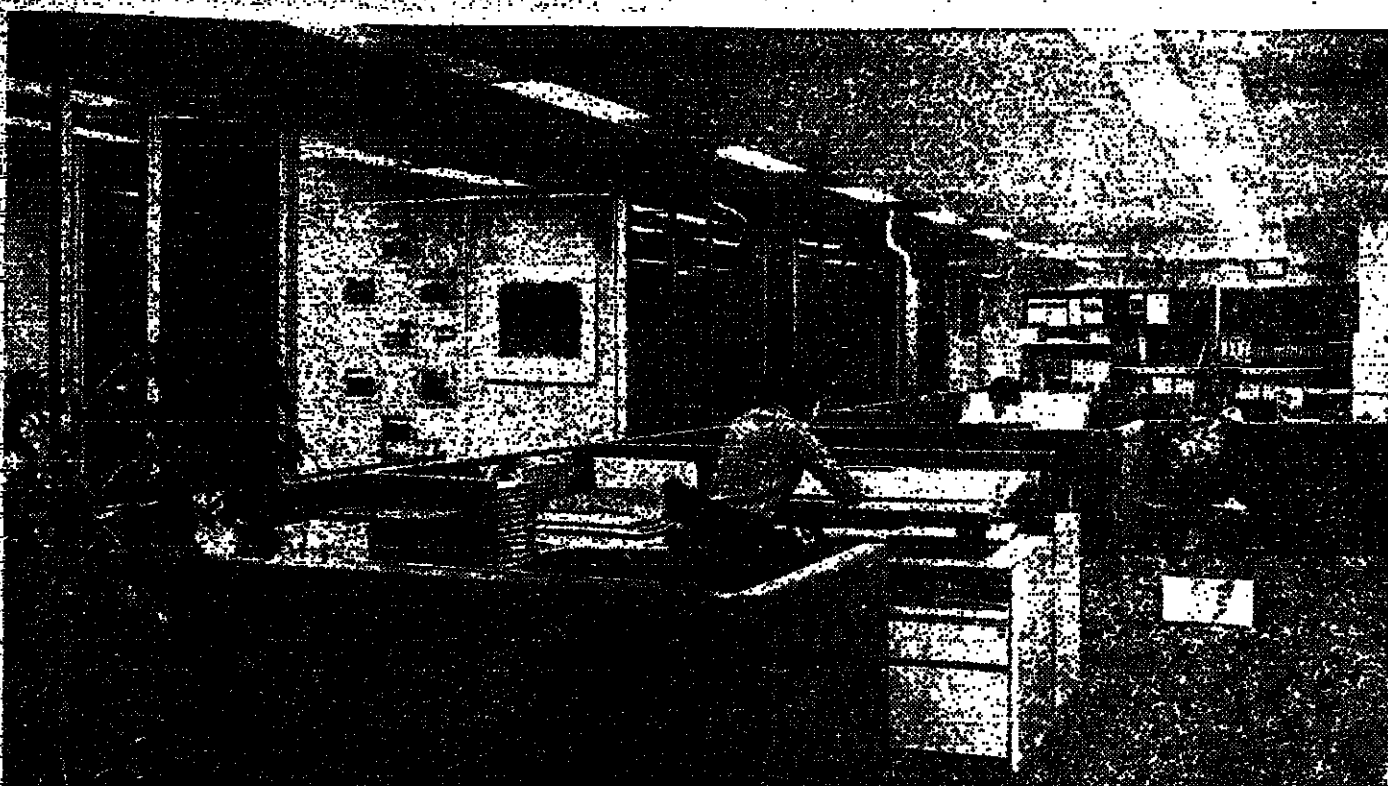
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## OFFICE EQUIPMENT XIX



Grey Advertising in London has just moved to new offices in Gt. Portland Street with help from Space Planning Services, the consultancy which was responsible for interior planning and design. Modular furniture in the open areas allows for the space to be used economically and provides each person with storage space and reference material close to hand. Low desk height screens in the creative department are used to make work station areas and also to allow for a high level of inter-communication between personnel.

## Recession layoffs distort view of job levels

IN A CITY of London street, an ultra-modernised shopfront boasts a display of U.S.-made computerised office equipment. The placards surrounding it proclaiming that the manufacturer has developed a complete information system which is at once flexible and reasonably priced—the system of the '80s and beyond.

On the floor above the shopfront in the late Victorian building office workers can be dimly glimpsed through the dingy windows seated at 1950s desks, hammering on 1960s typewriters surrounded by piles of 1970s paper. The office of the future is emerging very slowly from the womb of the office of the past.

While unions in the white collar sector throughout Western Europe have developed more or less coherent strategies for dealing with job restructuring in office work, many are now finding that their members are living through a period of hiatus between the massive propaganda blitz of two or three years ago, heralding the arrival of the office of the future, and its much-delayed appearance on the stage of the real world.

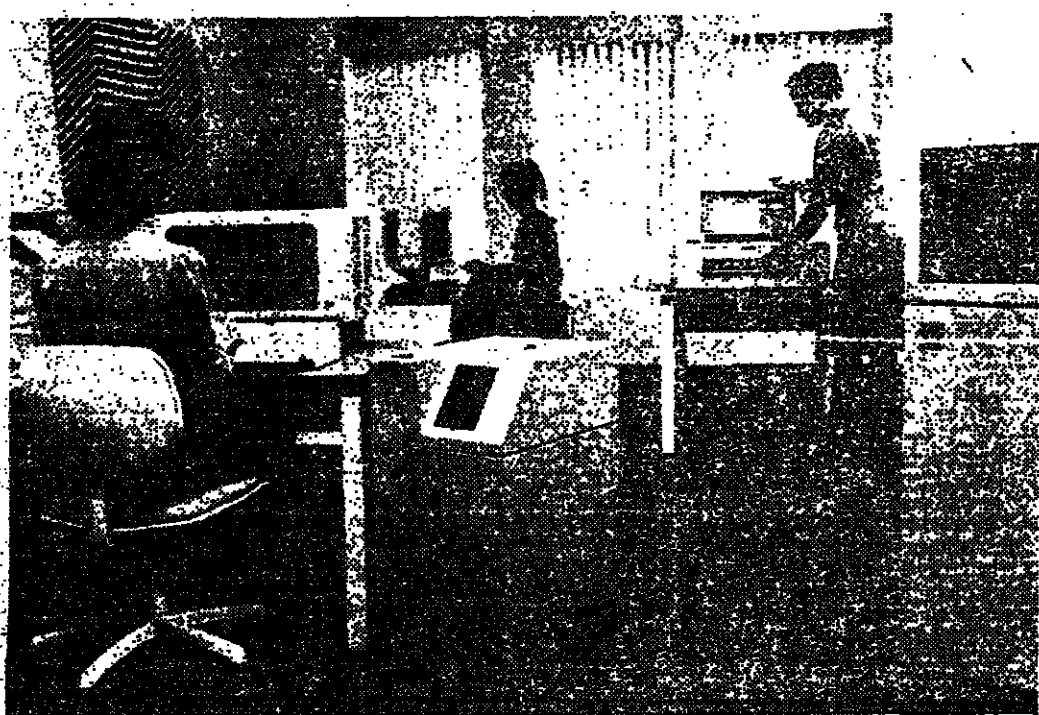
Where early beachheads of automated bureaucracy have been established, they have not proved to be the destroyers of jobs which many feared. Word processors have been adopted by a large number of companies and institutions without yet causing large-scale job losses.

The word "apparent" is used here advisedly—large-scale layoffs in most sectors because of the effects of recession have meant that where employers have introduced labour-saving equipment at the same time as making recession-induced redundancies, the effects of that equipment's introduction have been masked.

In successive debates on new technology at the TUC, and in other union conferences over the past four years, union officials have made the point with increasing vehemence. New technology—the common belief among unions how-is-being-introduced-under-the-cloak-of-a-slump.

The increased power given to employers by the high levels of unemployment throughout the West has not only meant that automated equipment can be introduced with few disputes, but that the consultation procedures—on which unions placed much stress when it became clear in the late 1970s that an exceptionally concentrated period of re-equipping was taking place—have often been dispensed with, ignored or never instituted.

Many union officials believe they can do little to interest their members in pressing for consultation at a time when levels of militancy are low and



Word processors have been adopted by a number of larger companies and institutions without causing large-scale job losses. Above: IBM's 5520 administrative system which combines advances text processing, files processing and electronic document distribution

when redundancies, for they generally fell well short of the ambitious guidelines laid down in the 1979 publication "Technology and Employment," by the TUC for technology agreements.

However, the picture is not simply one of union collapse before employer strength, or of large-scale introduction of automated equipment without regard to employees' views—though unions will often so represent matters. The reality is as usual complex, but a few main strands may be noted.

First, the white collar area has been the major one for the conclusion of new technology agreements—a largely British phenomenon, though not exclusively—which regulate the introduction of new office systems and lay down guidelines on how they are to be operated. The "boom years" for these agreements were 1979-80; there is now some evidence of a falling off.

They were most detailed in the health and safety aspects, at least in part because legislation exists on health and safety in the UK which could be used as a reference, and because the technical specifications of, for example, flicker on visual display units' screens could be precisely quantified.

Beyond that, exceptionally useful, but limited, area, the agreements brought modest gains to the unions. Many specified the redundancies would be made by voluntary means, that training should be given to employees, that (in a few cases) consultation should continue on the functioning of the new equipment. However,

they generally fell well short of the ambitious guidelines laid down in the 1979 publication "Technology and Employment," by the TUC for technology agreements.

These guidelines were motivated by the belief that the introduction of new systems allowed trade unions to increase their leverage on em-

ployers; however, that perspective belonged to the days before unemployment began its rapid climb.

Unions in other countries have not shown the same enthusiasm for specific agreements as the British. In West Germany and Scandinavia, issues of new technology tend to be absorbed in the general processes of consultation through—as in West Germany—the worker-director systems.

In France, union bargaining tends to be confined to wages and conditions, and office work especially is largely unorganised.

In Italy, on the other hand, there is some evidence of the adoption of the UK model, though with different features. Second, the automation of any process calls forth new skills and new types of jobs.

As an obvious example—millions of workers in large transport and its associated jobs were replaced by millions of automobile industry workers, so the workers who transmit information on paper are gradually switching to its transmission by electronic means. The computer programmer is taking over from the file clerk, the electro-mechanical maintenance man is giving way to the electronic engineer.

This is far from a painless process, especially as one type of worker whose skill is no longer required often finds it difficult to switch skills, even where training is available.

In very broad terms, the rise of the new skills have been in areas where union organisation is weak, while the decline of old skills have been in those areas where it is strong. Steelworkers are much more likely to be in unions, wherever they are, than systems analysts or tour guides.

The U.S. is the most obvious example of the trend: union membership now covers less than 20 per cent of workers, and unions find it difficult to break out of the declining in-

dustries where their early 20th century strength lay.

This is less true in the UK than elsewhere. Unions such as the Association of Scientific, Technical and Managerial Staffs and the white-collar union Apex have been able to bring into membership a variety of professions which other union movements consider virtually ununionisable.

Even in the UK, however, the price for recruiting these new elements has been the requirement to cater for demands removed from those of manual workers, and has set up strains within the labour movement—political as well as industrial—which require constant mediation.

Included among these strains is that of inter-union rivalry, heightened by the pressures of recession and falling membership rolls. Unions, especially those with members in advanced sectors, know their future existence depends upon the organisation of new jobs, and many of the contemporary inter-union disputes have at their base the disputed rights of organising round a particular piece of new technology.

Third, it is likely that the sharp lines between management and workers, which proceeded in part from the need to mobilise armies of industrial workers and to impose a discipline upon them, will continue to blur. Production workers will shrink in size as a proportion of the workforce, and in numerical terms as well: robots and other forms of automatic equipment will take up many of their tasks. Work groups will tend to become smaller, oriented more towards tasks and projects.

The implications for industrial relations are already visible: pay bargaining will continue to become less centralised, while the demand for more control over the conditions of work will grow, though taking different forms in different countries.

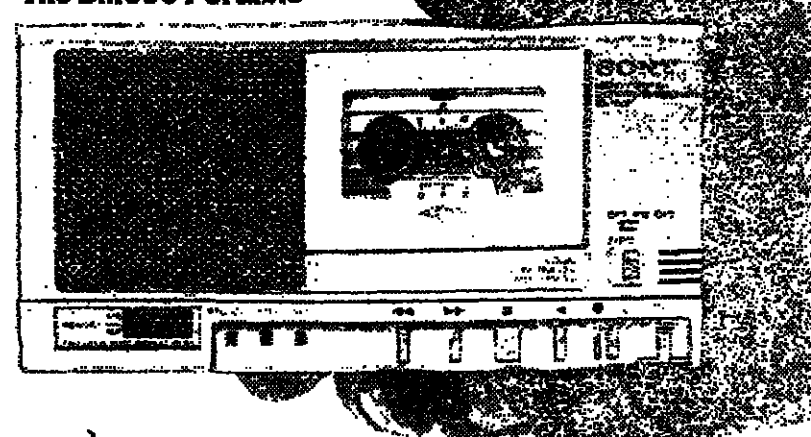
This does not mean that conflict will cease: indeed, it may take sharper forms. Nor does it mean that unionisation will cease to be both industrially and politically militant across a mass of workers—indeed, there is evidence that many white collar unions are, at least at leadership and activist level, more militant than their manual worker counterparts.

It does mean, however, that the forms of activism will become more varied and the alliances within labour movement more shifting. The "working masses" idealised by the early socialists will no longer be homogeneous.

هكنا من الأهل

XIX

The BM600 Portable



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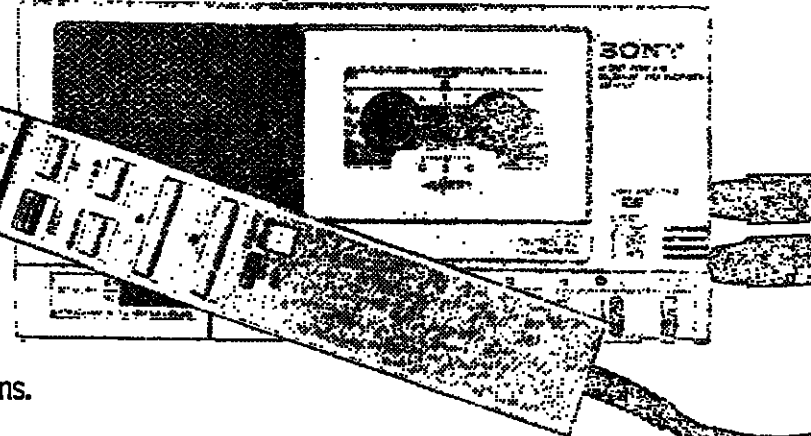
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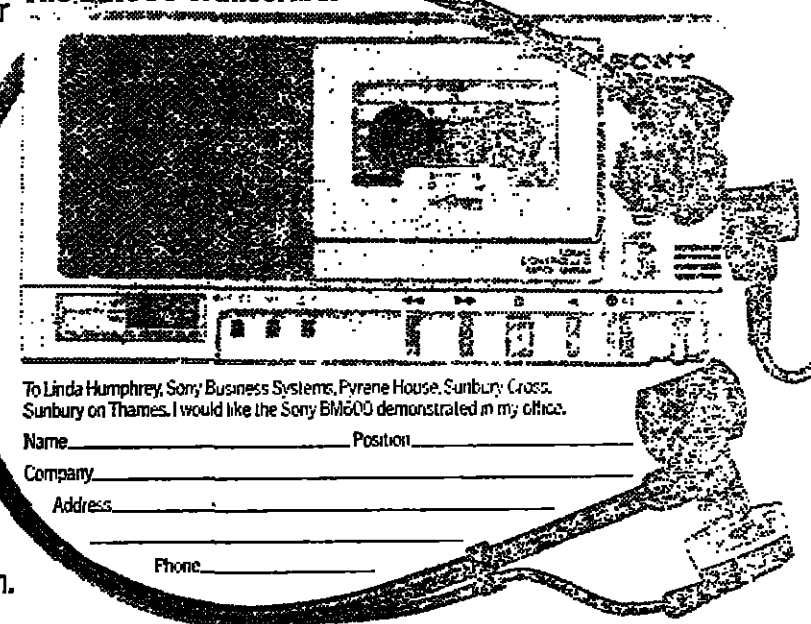
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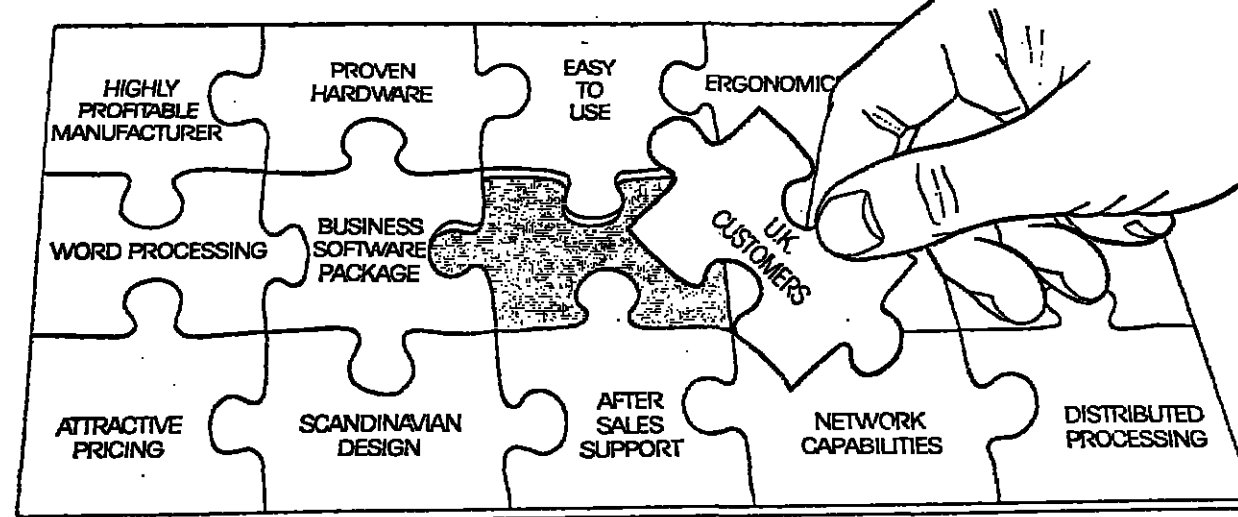
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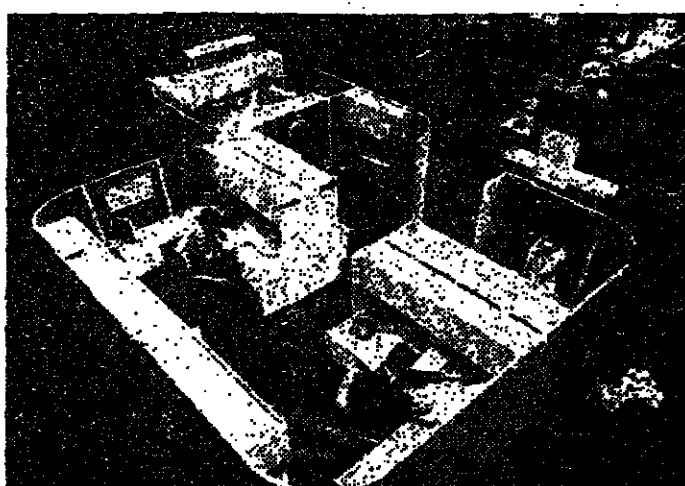
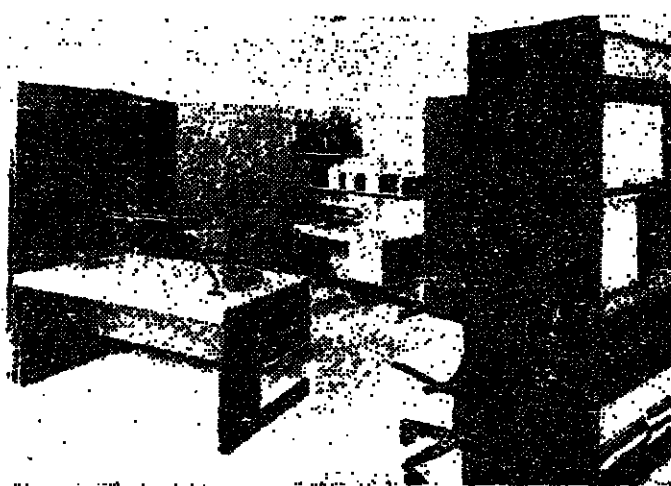
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## OFFICE EQUIPMENT XX

AMONG THE range of systems furniture being launched at the International Business Show is the British-made Lucas Programme 2 (top left), a modular, free-standing system designed to meet, and also anticipate the demands of the electronic office; the centre picture is an example from the comprehensive Westinghouse range; and, far right, is the new In Team system, being launched at IBS by Martela Contract Interiors of London.



## Competition intensifies in systems furniture market

THE SIZE of the systems furniture market in Britain is estimated to be at least £57m, according to the latest report conducted by the National Business Equipment Survey.

The report also suggests that Herman Miller is leading the field with a 32 per cent share of the market which, in general, is also highly fragmented. Among other notable manufacturers, Hille, for example, takes a six per cent share, according to the NBES report.

One of the more interesting features of the survey is the impact within the last two years made by Steelcase Ströfor, a relative newcomer to the UK market but the largest manu-

Business Show. Arenson International is launching its "Genesis" range of systems furniture, the company's "President" range of conventional furniture has traditionally been sold through its widespread dealer network and Arenson will be marketing its new systems range through dealers, too.

Historically, systems furniture in Britain has been sold on a direct sales-force basis. Lucas, another UK company, is launching its Programme 2 system within the Contract Design Association group display at IBS. The three basic elements of the system—desking, storage and screening—will be displayed independently and as an integrated system.

One of the oldest-established of British steel furniture manufacturers, G. A. Harvey, is to introduce a range of systems furniture at the Inscope show arranged by the architectural press, in London's Barbican in November.

Some European countries—for example, Denmark and Italy—have been highly successful in developing international reputations for good commercial furnishings, mainly by co-ordinated national promotional projects. British companies have suffered in international markets because no organisation existed to group together the best of British design in all aspects of commercial interiors, and to promote it as a national asset.

Now the Contract Design Association has been formed by some of the leaders in the contract furnishing industry in an attempt to rectify this situation.

An unusual and recent



Mr Gary Vinson of Herman Miller, the UK market leader, has a team of more than 70 in sales and support



Mr Tony Warner of Westinghouse—developing long-term relationships with client-companies



Mr Rodney Edge of NKR Environments—questions the degree of support offered by dealers



Mr John Sidwell of G. A. Harvey—soon to launch an all-British system furniture range

screens for separation and privacy. They are mostly Italian in origin and well designed. Such systems offer good use of vertical space and are advantageous for high storage requirements.

● **Linked-desking systems:** Here, desks are free-standing or linked together with triangular infill pieces to form working groups, with cable-ways sometimes built into the desk top. There are separate floor-standing storage units.

This system, a fairly recent development, originating from Germany, maximises work surface area and allows the transfer of documents between group members. It also allows the shared use of computer terminals; the provision of services within the desk is suitable for highly automated office functions.

Although the conventional office furniture market is contracting, the market for systems furniture is expanding. Competition is intensifying and the next 18 months will see the launch of a number of British ranges intent on taking a share of this sector.

There is controversy among systems manufacturers over the issue of whether or not to sell through dealers: the usual argument is that dealers may fall due to the complex nature of the sales, the long-term service support required; and because the salesforce will not be systems-orientated.

Mr Tony Warner, director of UK operations for Westinghouse, speaks of a possible conflict of interests: "Dealers are driven by turnover, whereas we're in the 'relationship business.' This special link is going

to be retained over many years. Customers won't just get this link or relationship from a dealer."

Westinghouse uses dealers in specific areas, eg Scotland, but the expertise and service back-up is "firmly Westinghouse".

Mr John Sacks, managing director of Arenson International, says that using dealers as a market tactic can be successful, if handled properly—the first priority is to select and train dealers and then back them with proper service and promotional support.

Mr Rodney Edge, managing director of NKR Environments of London, whose parent company is one of Sweden's largest manufacturers of systems furniture, suggests that many dealers within the desk is suitable for highly automated office functions.

Mr John Sidwell, managing director of G. A. Harvey, believes that the UK "could well become a dealer market—we recognise that the situation is changing rapidly and we'll adapt to continue to meet the needs of our clients."

Herman Miller has demonstrated its commitment to the UK market with a team of more than 70 involved in sales and field support, systems designers and customer services staff. The group is building up a dealer network to sell the products of its new chair/furniture division.

"I would like to believe that this new Herman Miller dealer community might well evolve to support our client-base with systems solutions," adds Mr Vinson.

### OFFICE FURNITURE

MICHAEL WILTSHIRE

facturer in its field in the U.S. The Steelcase target turnover in the UK is reportedly £40m by 1985-86.

Continental and U.S. manufacturers have taken the initiative in the UK marketplace because of the failure of some British manufacturers in terms of product-innovation, according to Jean Davis of the NBES survey unit.

A large proportion of British furniture manufacturers have not understood the full implications of the electronic office and are only just beginning to meet its design-function requirements.

Some UK manufacturers are, however, introducing new systems at this year's International

initiative, called Designers' Saturday, was also recently arranged in London by leading independent companies to provide an opportunity for designers, architects and businessmen to combine work with pleasure and discover more about the furniture design trends for 1982. Companies involved in the event included Aran Designs, Baumann Rendix, Domus, Environment, Ergonom, Herman, Miller, Hille International, House of Sweden, Interspace, Liberty, Oscar Woodlens and Scott Howard.

Broadly speaking, office furniture can be categorised under five main headings:

● **Conventional furniture:** is the most commonly used type and has changed little in the last 30 years. Its main components are free-standing desks with fixed drawer pedestals; four-drawer filing cabinets and free standing screens for partial privacy.

Its advantages are that it is readily acceptable; it is suitable for private offices and for open-plan and compatible with existing furniture. There is also the provision of status with larger desks and veneered work tops and so on.

● **Screen-based systems:**

Linked screens form the basis of these systems, with all other components relating to them. Work surfaces, storage units and pin-boards are all suspended on the screens. The idea was developed by Robert Propst in the early '60s for Herman Miller, and based on evaluation of office work and types of activity.

Its many advantages include the ability to create ergonomic "tailored" work stations to suit individual needs; there is efficient space utilisation and a high level of visual privacy and accessible personal storage space.

● **Screen-related systems:** These are similar to the previous system, but not dependent on screens to function. There are free-standing or screen-connected desks with fixed or mobile drawer pedestal.

Advantages of the system include flexibility and the provision of varying degrees of privacy. It is suitable for both private offices and open-plan areas usually it is compatible with existing furniture.

● **Storage-related systems:** Again, these are similar to screen-related systems, but rely on storage units instead of

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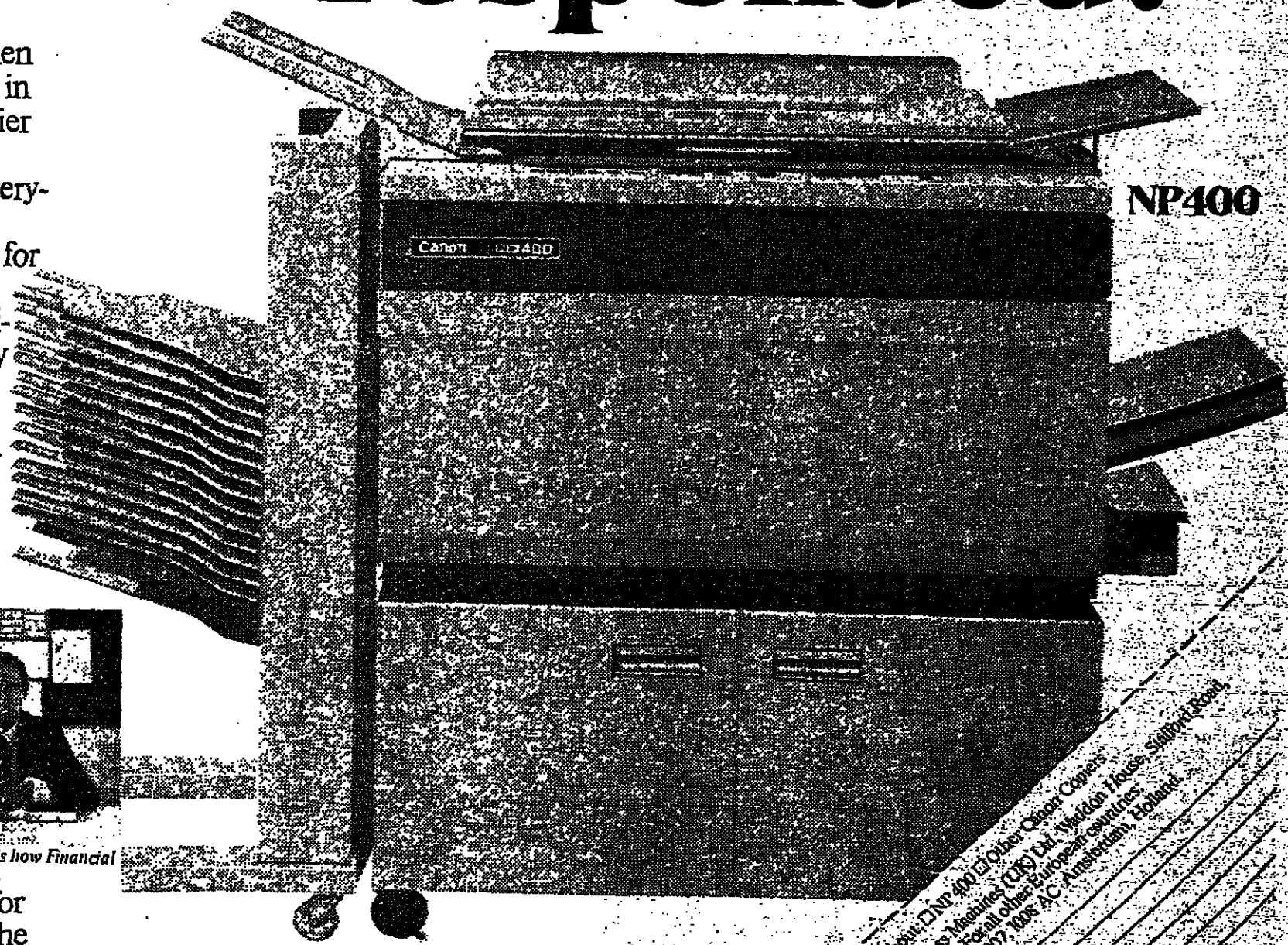
An office like ours will use them every day of the week." This was a comment made by an advertising agency. "The document feeder is a really good idea. And the sorter takes care of that boring collation," said a secretary.

And, in the words of a financial director, "We're looking for value for money and reliability, obviously. And it seems to me that the new NP 400 gives both". All in all, we got the impression that our new NP 400

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## FOREIGN AFFAIRS

## Garret's crusade stirs the debate

By Ian Davidson



Dr FitzGerald and Mrs Thatcher: an Anglo-Irish Council looks probable next month.

## THE IRISH CONSTITUTION

ARTICLE 2: The national territory consists of the whole island of Ireland, its islands and the territorial seas.

ARTICLE 3: Pending the re-integration of the national territory, and without prejudice to the right of the Parliament and Government established by this Constitution to exercise jurisdiction over the whole of that territory, the laws enacted by that Parliament shall have the like area and extent of application as the laws of Saorstát Éireann (Irish Free State) and the like extra-territorial effect.

not require these provocative words. The first question which needs to be asked in the Republic (though no doubt it will be the last to be answered) is this: does the church really want reunification, and could it tolerate the degree of pluralism required to accommodate 1m Protestants? On the face of it, the church could hardly object to a rephrasing of the aspiration to reunification, and even less to a realignment of civil law on divorce with Catholic practice. But it has yet to be demonstrated that the church would willingly encourage anything which would in the long run weaken its position as a larger and more pluralistic society.

That may sound unduly cynical, especially since the Catholic hierarchy is not a homogeneous body of men. But against the background of Irish politics, cynicism and scepticism may not be wholly out of place.

Needless to say, the Flanna

Fail opposition party has trodden all over Dr FitzGerald's proposals. They say that no change is required in Articles 2 and 3; that if the Ulstermen were to come to the conference table, then everything could be negotiated in a spirit of great generosity, but no concessions should be offered in advance; and that Dr FitzGerald's proposals will be divisive — which sounds like another way of saying that quite a lot of people in the Republic don't really want anything to do with those frightful people up north.

No doubt the sharpness of the Flanna Fail reaction was partly a response to Dr FitzGerald's accusation that they are not and have not been serious about reunification. There is an element of truth in the accusation: a very senior civil servant told me in Dublin last week: "Flanna Fail has been in power for most of the past 50 years, and their legislation has almost exclusively been partitionist in inspiration."

More detached (and more sympathetic) observers in Dublin wonder whether Dr FitzGerald hasn't "lost his trolley." After all, he has a precarious one-vote majority in the Dail which is dependent on the support of a handful of Independents. Government has inherited an appalling financial situation with heavy debts, high unemployment, high and rising inflation, and with a commitment to shift from direct to indirect taxation (which will send the consumer price index up even faster). Is he really in a position to take on the added controversy implied by his crusade?

Dr FitzGerald's answer is simple: he came into politics in order to do something about social reform, and in order to do something about reunification. If he ducks these issues now, his whole political career is pointless.

This is what he said in his radio interview on September 22. "If eventually it transpires that the Irish people don't want this, if the people in the state want to remain fundamentally a 26-county state, based on a majority ethos, and are not prepared to work with the people of Northern Ireland towards unity on a basis that could be common to both, well then I will accept defeat, and leave politics at that stage if necessary."

The reaction of the northern Protestants to Dr FitzGerald's initiative has been predictably violent, uncompromising and hostile. Last week a delegation visited Dublin to deliver to Dr FitzGerald and distribute more widely a document which was designed to be counterproductive from every point of view. In one hysterical breath, running to seven single-spaced pages, they demanded the abrogation of Article 2 and 3 and declared that nothing whatever would ever induce them to contemplate reunification. In other words, so far the dialogue in this little drama is running true to form all round.

Of course, Dr FitzGerald does not expect ever to be able to persuade a majority of Unionists to come round to the view that they could get acceptable terms for reunification; but then he does not need a majority of Unionists: a quarter of the Protestants and all the Catholics

would be enough to secure a majority, and that is a calculation which may explain the hysteria of the document delivered last week to Dublin.

If Dr FitzGerald needs to get a crowbar into the crevices of the Unionist rock, he also needs to shake the immobilism of British Government policy, and that is part of the purpose of trying to set up regular political links between Dublin and London. If an Anglo-Irish Council is set up, it will in one sense be an outgrowth of the joint civil service studies which were launched at the Thatcher-Haughhey meeting in Dublin last December; just what these studies amount to remains a dark secret, except that they include issues touching on the border and on the citizenship of people in the two parts of Ireland. But in the context of the more ambitious Dr FitzGerald strategy, the Anglo-Irish link is vital as a guarantee and encouragement, to those Protestants who are not set in concrete, to come round to the view that the Republic is not a hostile state and it is also vital as a means of persuading the British Government that a new (ie an Irish) ingredient is required if there is to be any way out of the present impasse.

## Even Flanna Fail perceives danger

The problem here is that Mrs Thatcher may imagine that she has won a magnificent victory over the H-Block hunger strikers. Of course, they did admit defeat; but in the course of the hunger strike the extremists recruited quite a lot of volunteers and raised quite a lot of money, and they have achieved some striking successes in the political arena. The question that now arises is, will they form an alliance with uncompromising politicians in the Republic, whose first target would be the downfall of a conciliatory government like that of Garret FitzGerald. The scenario most feared in Dublin is that the continued deterioration of the economic situation in Northern Ireland, where unemployment touches 20 per cent, could eventually lead to the destabilisation of the Republic, and that in the end Ireland will turn into another Lebanon. Even Flanna Fail perceives this as a real danger.

## Lombard

## SDP in search of an identity

By Peter Riddell

THE Social Democratic Party has established itself as a real political party. It is no longer merely the creation of the Gang of Four and a few ex-Labour activists. The party is beginning to have a life of its own with flesh and blood members who have strong commitments and opinions.

Yet after the week-long rolling conference through Britain the party's identity remains blurred. Is the SDP trying to become a successor to the Labour Party on the left or is it seeking a new role in the middle ground? Is the party aspiring to present a mixture of the policies of the last 30 years on a more consistent and coherent basis than before? Or is it proposing a radical new approach?

## Political forum

The membership clearly wants to create its own party. The dominant group consists of middle managers, small businessmen and professionals, the majority of whom have not been involved in politics before. They appear to take their politics seriously. One sign of the revival of the public meeting as a political forum. Another indicator is their strong views on organisational matters. For instance, key proposals of a majority of the leadership on the party constitution look like being overturned when the whole membership votes next year.

On policy, there is so far broad agreement between leaders and members on the core commitments, to the EEC, to Nato, to general disarmament but against unilateralism (much to the relief of the party's leaders), to electoral reform, to the mixed economy, and to freedom of choice in education and in the health service.

In many respects the SDP appears, in Dr David Owen's words, to be the party of the hard rather than the soft centre. Many of its members clearly have successful careers and take a realistic rather than an idealistic view of political issues. The SDP is the party of those who run (or want to run) organisations. It is thus distinct from the Liberal Party which often appears (somewhat unfairly) to be more the party of

idealists without power. The SDP's core commitments encompass a wide range of opinions on specific issues. There is no shortage of policy proposals. The problem is how to reconcile the ideas, some of which obviously are an extension of previous Labour Party thinking and some of which represent a break into new ground. It is all very well to let a thousand flowers bloom but is the party really committed to another reorganisation of regional and local government in Britain? Do the members really want a revived National Enterprise Board?

The snag is that, the more the party establishes policies and an identity, the more it risks alienating potential supporters. On housing, for example, the leadership has been playing down suggestions for a reduction in tax relief on mortgage interest. But at a fringe meeting there was strong support among the party's housing experts for a review of the favourable position of owner occupiers (a large slice of likely SDP voters). Similarly, the leadership is trying to maintain a fine balance on trade unions. There is strong support for moves to bring more democracy to the operations of unions yet the union members of the party are sensitive to the danger of union bashing.

On economic policy, there is a clear distinction within the leadership between those who favour a formal incomes policy agreed with the unions and employers and those who support the market economy and a more decentralised approach. The inflation tax suggested by Mr Roy Jenkins is partly intended to bridge this gap, though from the market side.

The SDP is rightly wary of too many manifesto commitments. But it needs to resolve these policy differences if it is to establish a clear identity and to fulfil its hopes of being a party of power rather than just of short-lived protest. The SDP has yet to show whether it can fully emancipate itself from the Labour Party past of its leaders while broadening its appeal beyond the middle class professional interest of most of its new members.

## Letters to the Editor

## Will investors on the Bourse get a fair deal?

From the President, Crédit Commercial de France

Sir—On several occasions you have published news and comments about the compensation of shareholders in firms which the French Government intends to nationalise. One of your headlines referred to a "fair offer." Such a conclusion may indeed result from a quick reading of the draft Bill, but a careful study of the methods by which the indemnities are to be calculated and paid shows that the compensation scheme adopted by the Government is in fact totally unsatisfactory.

For companies quoted on the Stock Exchange, the calculation is based on the three criteria which are generally used to assess the value of an enterprise: Stock Exchange quotations, the value of net assets, and a multiple of the net profit.

One can, of course, only agree with the choice of these three parameters. However, the way they are to be applied has been distorted—I fear deliberately—and calls for serious criticism. The Government's Bill refers to the average of Stock Exchange quotations over a period of three years: 1978, 1979 and 1980. This is not normal.

In actual business practice, for example when a firm merges with another firm or takes over another firm, a far shorter and more recent period is taken, usually the previous three or six months. I believe the difference may be considerable. The Commission had suggested that the Government take as a basis, for calculation the average of quotations during the first three months of 1981. A more recent period cannot be taken into account, since the share prices of companies due to be

nationalised dropped considerably after the May 10 Presidential election.

Instead the Government chose a much longer period, which is unfavourable to shareholders for three reasons: It is unfair to the shareholders of the most successful companies, whose assets and consequently share prices were in constant increase; for these companies, the longer the period of reference, the lower the average price.

To refer to quotations as far back as 1978 without making any provision for inflation is clearly unfair. Between 1978, the date when the reference period begins, and 1982, the year during which the bonds representing the indemnity are to be remitted to shareholders, considerable monetary depreciation will have occurred; the French Franc will have lost well over 50 per cent of its purchasing power.

Between January and March 1978, French share prices were greatly depressed by the prospect of a victory of the left in the parliamentary elections held in late March of that year.

The Government's Bill contains a most extraordinary definition of the net asset value of a company. First, the net assets referred to are only the net assets of the parent company, instead of the consolidated net assets, i.e. the net assets of the group. The difference may be considerable. If the parent company has numerous subsidiaries, which, because of their own development, or for their own security, have accumulated rather large reserves in the course of their existence, in such a case, the parent firm's interest in the

subsidiary will remain in the parent firm's balance-sheet, stated at its acquisition value, which means that it takes into account none of the accumulated reserves in the balance-sheets of its subsidiaries.

Secondly, the net assets referred to in the Government's project are the net accounting assets, instead of the revalued net assets. In normal business practice, one always determines the real value of assets at the date of their revaluation.

As for the third criterion, i.e. profit-making capacity, the Government has made the same mistakes as with the Stock Exchange quotations and the value of net assets: it only takes into account the results of the parent firm, instead of the group's consolidated results; it refers to the average of these results for the three years 1978, 1979 and 1980, without taking into account monetary depreciation.

I should add that the rate of capitalisation retained for the evaluation of a company on the basis of its profits generally exceeds 10 (the multiplier used by the Government) and is commonly about 20 to 25 for banks.

In calculating the amount of each indemnity, the Government has weighted the three criteria in the following proportions:

Stock Exchange figure (average)	151.65	206.50
Net assets	212.50	301.21
Value of profit-making capacity	145.95	425.37
Weighted average (50, 25, 25)	165.70	284.62

Meanwhile I would like to endorse Mr Mason's valid point that in practical terms it is the vendor who pays the premium. This has never been widely recognised, but if the auctioneers decide to reduce the premium charge then the necessary compensating increase in the vendors' commission should make it that much more obvious that a higher net return will often be gained from selling to a reputable dealer than in the sale-room.

Finally, it is also often overlooked that the buyer at auction, quite apart from receiving nothing in the way of services for his premium payment, enjoys less legal protection than when buying in a dealer's shop. Sales at auction are not "consumer" sales within the terms of much consumer protection legislation, the effect being that, unlike the dealer, auctioneers

are able to apply conditions of sale that virtually absolve them from any responsibility for the descriptions in their catalogues of the items they offer for sale. Philip Broadbridge, Secretary, 112, Brompton Road SW3.

## Baggage handling

From the Managing Director, British Airports Authority

Sir—I don't want to mar the good impression Mr Martin has of British Airways but I must explode a myth in his letter (October 8).

The British Airports Authority is not responsible for the ground handling of baggage arrangements at Heathrow for British Airways or any other airline. The responsibility lies with the airlines themselves. John Mulkerri, 2, Buckingham Gate, SW1.

## The buyers' premium at auction

From the Secretary, London and Provincial Antique Dealers' Association

Sir—Mr David Mason (letter October 6) was guilty of a Freudian slip when he referred to my association as having capitulated, together with the British Antique Dealers' Association, to Sotheby's and Christie's by withdrawing the joint legal action against the two auction houses in return for a somewhat vague undertaking by them to "review" the terms of their respective buyers' premium charges. It was, of course, the Society of London Art Dealers who acted with the BADA.

LAFADA had declined to support the action not because of any liking for the premium but because we had never been

convinced that, after inevitably vast expenditure, the outcome would have been the permanent lifting of the premium. Even had the auctioneers lost the court case there would have been no legal objection, according to advice we had received, to them reimposing the premium soon afterwards—independently of course. As for the speculation that they might have been forced to repay the total premium monies received, estimated as £30m-£50m since the inception of the impost, few would seriously believe that any such decision would have been made, even had the court the power so to do.

However, reverting to Mr Mason's anger at the dealers' "capitulation," it is perhaps too soon to judge the issue until Sotheby's and Christie's have announced the outcome of their deliberations in 3 months time.

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## INTERNATIONAL CAPITAL MARKETS

BY ALAN FRIEDMAN

## INTERNATIONAL BONDS

## Cheered market regains its appetite

IT LOOKED as though the Eurobond market had finally lifted from the international bond markets last week. Although past experience has shown the risk of predicting continuing stability, the impact of falling interest rates, particularly in the U.S. and West Germany, provided considerable cheer for major Eurobond borrowers, investors and dealers.

The most striking feature of last week's action in the bond markets was not the rise of new issues—a total of \$4.75bn in fixed interest Eurobond bonds—but the reports by numerous traders that the market was actually digesting the flow.

While Fed funds touched a low of 12½ per cent in the U.S. and Citibank chairman Walter Wriston predicted that the U.S. prime rate would fall to 10 per cent by next year, a flood of famous and not-so-famous borrowers came to the market. The list included Citicorp itself (\$1.5bn), Ohio Edison (\$500m), Simpson-Sears (\$400m), Hydro-Quebec (\$150m), Arizona Power (\$500m), British Columbia's Municipal Finance Authority (\$540m), the European Investment Bank (\$100m), and General Motors Acceptance Corporation (\$150m). There were also strong rumours of a \$100m issue this week for Amheuser Busch.

Traders in the Eurobond market started long and hard at Washington and Frankfurt and seemed to like what they saw. In the U.S., Mr. Ed Meese, President Reagan's right-hand man, spoke of his desire that the MIB money supply should fill targets. In West Germany the Bundesbank cut the special Lombard rate from 12 to 11 per cent.

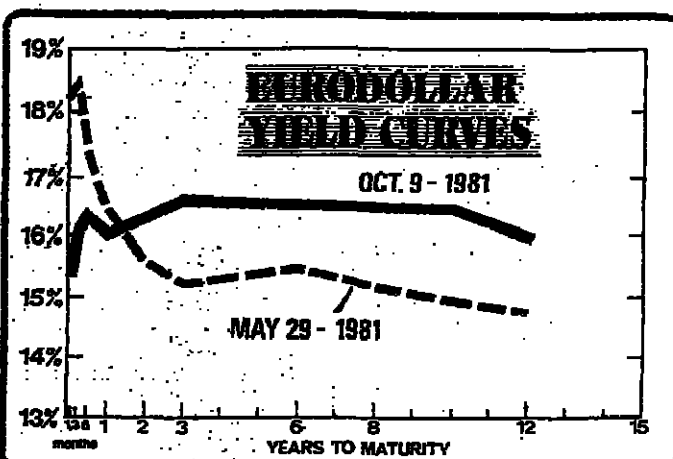
In the secondary market, prices reflected the new-found spirit of optimism. Eurodollar bond prices rose 14 points on the week, D-Mark foreign bond prices rose 14 points, and in Switzerland foreign bond prices rose nearly 20 points.

Six-month rates fell in three key currencies. The six-month Eurodollar rate fell nearly 20 points to close the week at 14½ per cent; it touched a level below 16 per cent at mid-week.

The D-Mark rate declined 4 points to 11½ per cent and the Swiss franc rate hit 10½ per cent, a drop of 3 points.

Among the week's new Eurodollar issues, only one seemed to be having a slightly difficult time. The EIB's 14½ per cent 10-year bonds, managed by Hambros Bank, were quoted at a bid price as low as 98 against the fixed issue price of 99½ in pre-market trading. The new of the market appeared to be the \$540m adjustable coupon 16-year offer for the Municipal Credit Authority of British Columbia through Credit Commercial de France, which was trading on Friday at a bid price of 100½.

This rather innovative issue provides the borrower with the option of changing the coupon



every four years. One result of last week's excitement on the Eurobond markets is that hopes of a lasting positive yield curve may now be realised. A yield curve (see chart) is a measure of the relative cost of short- and long-term money.

For the borrower, this would mean that money can be more easily raised in the market. For the investor, it makes coupons on long-term instruments more attractive, provides a certain degree of stability and offers the possibility of a capital gain as bond prices rise to bring interest rates in the future.

In the D-mark sector last week, a heavy calendar, totaling at least DM 650m, was set for the next two weeks by the Capital Markets Subcommittee. As reported already, a DM 200m 10-year bond with a 10½ per cent coupon was launched on Friday for the European Investment Bank, while a DM 100m 10-year bond with a 10½ per cent coupon came on Friday for the Swedish Export Credit Corporation.

## U.S. BONDS

WALL STREET got the answer it had been looking for on Friday evening, when the Federal Reserve cut by 1 percentage point the surcharge on the discount rate it charges to large frequent borrowers.

That makes the basic discount rate 14 per cent and the premium rate 16 per cent down from the record 14½ per cent and 16½ per cent respectively of last May.

The discount rate cut ended the argument in Wall Street over whether the Fed's Open Market Committee meeting last Tuesday had agreed to ease credit market pressures in order to accelerate growth of the lagging MIB measure of money supply. The Fed, quite clearly, has eased modestly and in addition to lowering the discount rate has probably also lowered its preferred trading range for Federal funds from 15-21 per cent to, perhaps, 12-19 per cent.

But it is obvious from the minutes of the August 18 Open Market Committee meeting, which were published on Friday, that even though no policy changes were made at that time, the debate about the need to stimulate MIB was already causing divisions within the Fed.

In the past week, this argument entered the political mainstream, with Messrs Bush, Meese and Regan all lecturing the Fed about the need to take action in order to avoid unnecessarily provoking a recession.

The counter-argument, as the August committee meetings make clear, is that much, perhaps all of MIB's sluggishness (it is growing at 2 per cent below the lower end of the Fed's annual 3.5-6 per cent target range) has been caused by a spill-over into types of money counted in the broader M2 and M3 definitions which are, respectively, at and above the top of their target ranges.

But M2 is so hard to calculate, and of such shifting composition, because of changing rules about interest rates and savings in the U.S. that the committee seems finally to have accepted that it cannot run the U.S. economy by feeling the pulse of M2. So, for the moment, MIB rules and, as it went down again sharply on Friday, the Fed feels justified in easing credit.

Bond prices, helped also by Friday's report of a meagre 0.2 per cent increase in September producer prices, finally mustered themselves for a rally, and the Treasury's 13½ per cent long bond closed at just under 99, up almost 5 points on the week.

Short rates had drifted lower anyway last week, helped by an accommodating Fed. The Fed funds rate is now expected to stabilise at 14 to 15 per cent, allowing the prime rate to come down another notch too from the 18.5 per cent set by Chase Manhattan last week.

So suddenly, we have the best credit market conditions in the U.S. for months, something

## CURRENT INTERNATIONAL BOND ISSUES

Borrowers	Amount	Maturity	Av. life	Coupon	Price	Lead manager	Offer yield
U.S. DOLLARS							
Arab Bank, Bahrain	75	1988	7	—	100	Societe Generale	—
Credit Lyonnais	50	1988	7	5½	100	Arab Bank, Bahrain	5.319%
Lloyds Eurofinance BV	200	1993	10	5½	100	Credit Lyonnais	5.319%
Co-ban Eurofinance BV	30	1991	10	5½	100	London & Cont. Bankers	—
Bergan Bank	25	1991	10	5½	100	Co-operative Bank	5.576%
Industries Penoles	60	1989	8	10	100	CSFB, Bergen Bank	5.576%
Cydsa	50	1988/91	—	9	100	CSFB, SBC	10.250%
Nehm, Indiana Pub. Ser.	70	1988	7	17½	100	Central Illinois	9.203%
Citicorp O/S Fin.	150	1986	5	16½	100	Merrill Lynch	17.250
Ohio Edison NV	50	1988	7	17½	—	Morgan Stanley, Citicorp	16.750
Simpson-Sears Acc. Co.	40	1988	7	17½	100	Wood Gundy	17.500
IF.C.E. (g'teed France)	125	1988	7	5½	100	Sumitomo Fin. Int., BNP	5.319%
Ireland	100	1988	7	5½	100	Manufacturers Hanover	5.319%
Hydro-Quebec	150	1991	10	17½	100	S. G. Warburg, CSFB	17.250
Arizona Pub. Ser.	60	1986	5	17½	100	CSFB	17.250
Fin. Auth. Brit. Col.	100	1985/97	—	10	100	CCF	17.000
ICMAC O/S Fin. NV	150	1994	3	16½	99½	Hambros	16.803
Bank of Nova Scotia	100	1993	12	5½	100	Morgan Stanley	16.612
Nordic Int. Fin. BV	40	1991	10	5½	100	CSFB	5.319%
Arbed	15	1988	4½	—	100	Al-Mal Group	—
CANADIAN DOLLARS							
Hudson's Bay Co.	40	1987	6	18	—	Morgan Stanley	—
D-MARKS							
Council of Europe	100	1991	10	10½	99	BHF Bank	10.467
EIB	200	1991	10	10½	100	Deutsche Bank	10.725
Swedish Ex. Cred. Corp.	100	1991	10	10½	—	WestLB	—
SWISS FRANCES							
City of Oslo	100	1991	—	8½	—	Handelsbank	—
Nederlandsche Gasunie	100	1991	—	8	101	Credit Suisse	7.852
World Bank	100	1991	—	8	99½	UBS	8.075
Japan Develop. Bank	100	1991	—	7½	100½	Credit Suisse	—
ECUS							
EIB	45	1989	6.5	14½	100	BNP	14.250

† Registered with U.S. Securities and Exchange Commission. † Purchase Fund. † Cancelled. † Not yet priced. † Final terms. † Placement. † Floating rate note. † Minimum. † Convertible. Note: Yields are calculated on AIB basis.

## CREDITS

BY PETER MONTAGNON

## Competitive spirit moves East

IF EUROCREDIT margins alone are any guide to country risk, Malaysia and Indonesia are now safer bets than France.

Terms on the forthcoming \$500m to \$600m 10-year credit for Electricite de France (EDF) were set last week by Credit Lyonnais and reveal an average weighted margin of slightly over 0.4 per cent. As already reported, Indonesia and Malaysia are each raising 10-year money at that margin of only ½ per cent.

Yet this curious state of affairs probably says more about the pitfalls of comparing loans on the basis of spread alone than it does about the actual country risks involved.

Much more important than changing country risk in pushing down Far Eastern margins has been the fierce competition for business in the liquid Hong Kong syndication market.

Such borrowers as Indonesia and Malaysia, which each has more deposits in the inter-

national banking system than loans outstanding from it, are natural targets for asset-hungry banks.

The competitive spirit in Europe which forced spreads sharply lower last year has now died away, especially where more active borrowers are concerned.

In any case the commitment fee on the EDF credit is a more important indicator than the margins (0.3 per cent for the first three years, 0.4 per cent for the next four and 0.5 per cent for the final three). This credit is not basically designed to be drawn but rather to back up the borrower's commercial paper lines in the U.S.

Banks which participate thus expect to make more profit from fee income than from the margins, and the commitment fee works out slightly higher than previous EDF credits where it has been set at ½ per cent.

The commitment fee for the new credit has been set at ½

for the first three years. Thereafter it is ¾ on that part of the loan which is neither drawn nor used as back-up for commercial paper, and 1 per cent on funds which are not drawn but are used as commercial paper back-up.

This slight increase in fee could be seen as evidence of a fractional slippage in France's Eurocredit popularity, but it is far less significant than the change of sentiment in the Eurobond market, where French names have clearly lost their premium rating.

In a separate development Credit National, France's state financing agency, has decided to alter the conditions of its \$75m five-year credit arranged last year with a margin of ½ per cent through a group of banks led by Hambros.

The change will allow lending banks to change their participation into 13½ per cent eight- or 12-year bonds at any time during the next four years. The bonds would be quoted

securities, reflecting the fact that the original purpose of the credit was to act as bridging finance ahead of the launch of a bulldog bond.

Credit National had originally expected to launch the bonds within a year, but market conditions have not been suitable and this is one way of releasing banks which had not expected to provide the credit for the full five years of its life.

Stung partly by the breakdown of negotiations for a \$500m loan for the country's railways, Italian officials confirmed on Friday that they are seeking to organise a more orderly queue for Italian borrowings in the Eurocredit.

The talks between Ferrovie and its bankers broke down because the borrower sought a margin over prime rate of ½ per cent, as successfully applied in the recent ENEL \$500m deal. This was too low for the banks, which do not regard the railways as a borrower of such high quality as ENEL.

## U.S. BONDS

BY IAN HARGREAVES

## Fed agrees on need to ease credit

WALL STREET got the answer it had been looking for on Friday evening, when the Federal Reserve cut by 1 percentage point the surcharge on the discount rate it charges to large frequent borrowers.

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So suddenly, we have the best credit market conditions in the U.S. for months, something

which should this week release some of those long-delayed corporate bond issues to the market.

If it all sounds wonderful, it may be best not to forget all the other problems, like the Treasury's immense borrowing requirements and the inflationary risks involved in reheating the economy with tax cuts. These factors are only in temporary oblivion in Wall Street.

A complete reversal of both the recent and prospective improvement in bond prices remains likely later this quarter," says Mr Philip Braverman, Chase's money market seer.

## U.S. INTEREST RATES (%)

	Week to Week	Oct 9	Oct 2
Fed Funds weekly avg	14.17	14.17	14.17
3-month Treas. bills	13.52	13.52	13.52
3-month CD	15.40	15.40	15.40
30-year Treas. bond	14.23	14.23	14.23
AAA Utility	17.28	17.28	17.28
AA Industrial	16.25	16.25	16.25
AAA supply (B&N)	6.85	6.85	6.85

Source: Solomon Bros. and First Boston

## FT INTERNATIONAL BOND SERVICE

U.S. DOLLAR	Issued	Bid	Offer	Day week	Yield
STRAIGHTS					
CIBC 15% 85	100	98½	99½	+0.1	17.07
CIBC 15% 91	100	98½	99½	+0.1	17.07
CNA 15% 86	100	98½	99½	+0.1	17.07
CHE 12% 91	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 85	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 84	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 83	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 82	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 81	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 80	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 79	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 78	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 77	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 76	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 75	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 74	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 73	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 72	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 71	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 70	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 69	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 68	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 67	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 66	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 65	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 64	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 63	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 62	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 61	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 60	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 59	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 58	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 57	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 56	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 55	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 54	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 53	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 52	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 51	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 50	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 49	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 48	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 47	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 46	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 45	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 44	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 43	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 42	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 41	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 40	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 39	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 38	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 37	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 36	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 35	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 34	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 33	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 32	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 31	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 30	100	98½	99½	+0.1	17.07
Citicorp O/S Fin. 15 29	100	98½	99½	+0.1	1



# MINORCO

Minerals and Resources Corporation Limited  
Incorporated in Bermuda

## Highlights 1981

- \*Acquisition of approximately US\$ 1 billion of new investments
- \*Net earnings increased by 50% to US\$ 171.8m
- \*Earnings per share rose by 12% to US\$ 1.43
- \*Dividends per share rose by 10% to 22 US cents

Extracts from the letter to shareholders by the chairman  
Mr. H.F. Oppenheimer

The financial results for the year to June 30, 1981 are not comparable with those for the preceding year, both because the investments acquired by Minorco in December 1979 were held for only part of the 1980 financial year and because of further major acquisitions which took effect on February 24, 1981. At that time Minorco acquired 29% of the equity of Consolidated Gold Fields (Gold Fields), 36% of Charter Consolidated (Charter), and the remaining 50% interest in Minorco Canada (formerly known as Anglo American Corporation of Canada) not held by Minorco, whose results have now been consolidated for the first time. The consideration for the acquisition of these interests was the issue of 59,326,640 new ordinary shares which increased the issued share capital to 159,128,346 shares.

Earnings from operations rose by US\$3.5 million to US\$28.2 million. An increase in dividend income of US\$9.2 million was offset by exchange losses, increased administration expenses consequent upon the greater level of Minorco's activity and the rise in interest expense from US\$6.6 million to US\$7.7 million. Minorco's share of undistributed earnings of investments accounted for by the equity method rose by US\$71.0 million to US\$158.7 million. Net earnings for the year amounted to US\$171.8 million, an increase of US\$57.0 million over net earnings for the preceding year. Earnings per share (based on the weighted average number of shares outstanding during the year) were US\$1.43 compared with US\$1.28 in 1980. A final dividend of 16 US cents per share has been declared bringing the total dividends for the year to 22 US cents, an increase of 2 US cents over dividends declared in the previous year.

### Acquisitions and developments

During the year Minorco made a number of significant investments in furtherance of its policy of broadening the geographical and commodity spread of its interests and improving the quality of its earnings. The largest of these acquisitions was the purchase of a 29% interest in Gold Fields, which is a major UK based natural resources group with important gold and base metal mining interests in South Africa and Australia, and major investments in the UK and the USA in construction materials, manufacturing and commerce. The net earnings of Gold Fields rose by £24.4 million to £114.3 million in the year ended June 30, 1981. As mentioned above, Minorco also acquired 36% of the equity of Charter, a UK group with a wide range of industrial, investment and mining interests. Among Charter's industrial interests are investments in mining equipment, insulation, heating and refrigeration products, metal refining and civil and mechanical engineering. Mining activities include open-pit coal operations, tin dredging, and wolfram and potash production. Charter's earnings before extraordinary items rose by £5.3 million to £33.2 million in the year ended March 31, 1981.

Engelhard Minerals & Chemicals (EMC) achieved record earnings in 1980 of US\$532.7 million, an increase of US\$183.0 million over 1979. Effective in May, the shareholders of EMC approved the separation of EMC into two separate companies. Phibro Corporation (formerly the Phibro Brothers Division) and Engelhard Corporation (in which the businesses of the former Engelhard Industries and Minerals & Chemicals Division were consolidated). Consequently upon the spin-off of Engelhard Corporation, Minorco has an interest of 27% in each of these companies. Early in August, Phibro announced that agreement had been reached to acquire the business of Salomon Brothers, the distinguished Wall Street investment banking firm.

Minorco Canada has as its principal investment 44% of the equity of Hudson Bay Mining and Smelting (HBM&S), based in Toronto, is a diversified natural resource corporation with investments in metals, petroleum, fertilisers and chemicals located in Canada and the USA. In 1978 Minorco and HBM&S formed a company, Plateau Holdings Inc. (Plateau), in which Minorco's interest is just under 50%, as a vehicle for investment in the United States; the first acquisition was Inspiration Consolidated Copper, the common stock of which became wholly-owned by Plateau at the end of 1978. During the year under review, the asset base of Plateau was expanded by investments in the fertiliser and agricultural chemical business and in coal mining. In June 1981, a cash merger was effected with Terra Chemicals International Inc., an Iowa based corporation manufacturing and marketing a wide range of fertilisers and agricultural chemicals. HBM&S has held a majority interest in Terra for some years and retains a 50% indirect interest. The cost of Minorco's interest in Terra was US\$60 million payable in cash. Terra, a progressive and well managed company, is presently engaged in the investigation of a number of major expansion projects in the US agricultural industry, including a possible investment in phosphate ore reserves and phosphoric acid production facilities.

Progress was made during the year towards the realisation of the Minorco and HBM&S objective of acquiring at least 100 million tons of coal reserves in the USA, sufficient to support an annual production rate of 5 million tons. In January 1981, Bailey Mining Company of Kentucky was acquired: the production rate at Bailey Mining is being increased from its present level of 350,000 tons to 750,000 tons per annum. Subsequent to the year-end the Sovereign Coal Group Inc. of Bluefield, West Virginia and its subsidiary company, Harman Mining Corporation of Harman, Virginia were acquired. The total cost of this acquisition was US\$152 million for coal assets worth US\$95 million and excess working capital of US\$57 million, part of which was used to fund the purchase; the balance was financed by the issue of 18-month instalment notes. The facilities acquired include two long-established coal properties, Harman and Sovereign-Majestic, and two coal preparation plants. Annual output at the current production rate is 1.9 million tons of premium coking and steam coal. Steps are being taken to increase production to the rate of 2.25 million tons per annum. Both Bailey Mining and the Sovereign mines will be managed from the recently established headquarters of Inspiration Coal Inc. located in Knoxville, Tennessee.

Inspiration Consolidated Copper (ICC) incurred losses of US\$17.7 million in 1980 as a result of production problems and the industry-wide strike which shut down operations for 115 days. Production levels and operating efficiencies have improved significantly in 1981 although the company continues to record losses as a result of low copper prices. The major capital expenditure programme has proceeded well with the successful introduction of the ferric cure leach process and the completion of the concentrator modernisation and the rehabilitation of the tankhouse. The major effort in the balance of 1981 and in 1982 will be in relation to the smelter. As part of the financing programme, Minorco and HBM&S each contributed additional capital of US\$5.9 million up to the end of June 1981.

Anglo American Corporation do Brasil Limitada, the vehicle through which Minorco invests in Brazil, had a satisfactory year highlighted by the declaration of its first dividend.

The high level of investment activity during the year contributed to a decline in working capital of some US\$102.5 million and at year-end the working capital deficiency of US\$77.5 million was funded in the main by short-term borrowings of US\$54.7 million. Consideration is being given to raising additional long-term finance from third parties in the near future, the proceeds of which will in part be utilised to repay short-term borrowings.

### Outlook

It is anticipated that earnings will advance significantly in the year ahead, primarily as a result of Minorco's share in the earnings of Gold Fields and Charter. The profitability of Minorco's principal investments will, however, be adversely affected by the ongoing recession in the world economy, accentuated by high interest rates in the USA, Canada and Europe and the increasing volatility of foreign exchange markets.

Minorco's investments in base metals, primarily in HBM&S, ICC and Zambia Copper Investments will not really prosper until there is a sustained improvement in the economic activity of the western industrialised nations and consequent increases in metal prices. The industrial interests of Minorco, represented principally by its investments in Engelhard Corporation, Gold Fields and Charter, are maintaining their profitability most satisfactorily in difficult trading conditions. The earnings of Phibro have declined significantly from the record levels of 1980 reflecting narrowing margins: the nature of Phibro's business as international marketers and traders in a comprehensive range of raw materials, however, gives it considerable resilience even in relatively depressed markets. Phibro's acquisition of Salomon Brothers should greatly extend and enhance its trading activities. Gold Fields' earnings will be adversely affected by the reduction in the gold price but the spread of the company's activities should enable it to maintain satisfactory results.

Copies of the chairman's letter, and the report and accounts are obtainable from the office of the United Kingdom Transfer Secretaries, Charter Consolidated Limited, P.O. Box 102, Charter House, Park Street, Ashford, Kent TN24 8EQ.

## BUILDING AND CIVIL ENGINEERING

### £20m project at RAF Wattisham

BOSKALIS WESTMINSTER has received a £20m prestigious Property Services Agency contract for the airfield survival measures work at RAF Wattisham, near Ipswich, Suffolk.

The Merseyside-based company will execute the work for Boskalis Construction by which says the contract represents a substantial opportunity for boosting labour in the construction industry.

Involved in the project are

200 aircraft shelters with steel arches and associated components, with a reinforced concrete hardening over the arches.

Mechanical and electrical services are also included as are the associated aprons and taxiways.

Provision of headquarters and ancillary buildings will cater for personnel needs and general services, and relevant infrastructure works are also included.

### New orders worth £9m to R M Douglas

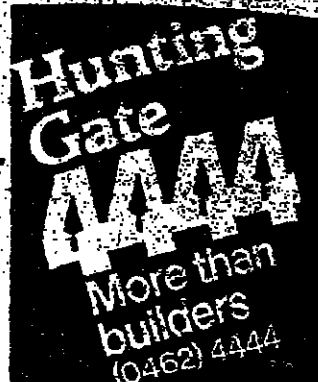
RECENT PROJECTS won by R M Douglas Construction are together worth more than £9m, the largest of which is a £4.2m superstore and multi-storey car park at Bishop Auckland for Fine Fare.

Work involves the construction of a reinforced concrete store and self-contained shop units together with roof car parking plus an integral multi-storey car park on two levels. There will also be fitting out (excepting refrigeration and

internal shop fitting) which will be carried out by the client as direct contracts.

Other recent projects include Townsend Properties bring in another £1.1m and comprise a five-storey building with reinforced concrete frame, upper floors and roof with blockwork external walls.

Two blocks of industrial units at Hendon for Slough Estates Design and Construction make up a £1m deal. The buildings



will be of steel portal frame with asbestos roofing and cladding, include integral two-storey offices, and the job also includes external works.

Other new work covers civil engineering and building work for public authorities and for industrial and commercial clients in South Wales and north east and Scotland.

### Tarmac takes over £6m

BIGGEST JOB in work worth £6m just won by Tarmac is an almost £2m staff training college for the Trustees Savings Bank Central Board at Creyndon Lane, Shirley, Solihull.

Another regional job, worth £1.7m, is for a single-storey warehouse unit, office block and maintenance bay for NMT Properties at Rotherham.

Tarmac Schall has £701,000 for building corporate headquarters for Barclays Bank at Tunbridge Wells.

Work for Wimpey Construction UK at Livingston, West Lothian is worth £374,350; also in Scotland is over £1m worth for Distillers Co's new offices at Midlothian.

At Birmingham, refurbishing

ground and first floor offices for the Scottish Life Assurance Company in work worth £385,000.

Holland, Rannan and Chittis SW is to install cash dispensers in the south west for the Midland Bank (£250,000).

Cubitts General Contractors has over £200,000 worth for renovating staircases and lifts at Barbican and Farringdon Stations for British Railways Board.

Other schemes include new car parking facilities at Waverley, Liverpool, for the west region of British Gas; a supermarket for Kwik Save Ltd. in West Ham, London; a pedestrian footbridge in the City of London; and refurbishment in Staffordshire of a Halifax Building Society office.

### Variety for Wimpey

CONSTRUCTION OF Phase 3 of the Greenwich peninsula link road for the London Borough of Greenwich awards £2.8m to Wimpey Construction which will carry out the work (some 21,500 sq metres of roadway 730 metres long) under the supervision of the Borough's engineer.

Associated Dairies of Leeds has placed a £2.2m contract for a superstore and shop units in Normanby Road, South Bank, near Middlesbrough in Cleveland. A total of 62,500 sq ft of store will give a selling area of 42,000 sq ft, and the build-

ing will be mostly single-storey with mezzanine floor to plant room and part of the warehouse. Construction is of steel frame on concrete pad and beam foundation.

The company's Luton office has received a £2m contract from Laming Management Contracting for work on the Griffin Centre Project in Cambridge, part of which comprises concrete foundations and the concrete frame superstructure for a 140 x 60 metre, two-storey department store with roof-top parking.

### Mixed bag for F. Clay

A WIDE range of activities will be undertaken by F. Clay and Sons (Contractors) in carrying out a series of new contracts which together have a value of more than £3m.

At Baddesley Clinton, Warwickshire, a National Trust deal worth £270,000 covers repairs and renovations to existing listed buildings - house, bridge, moat, stable block and coach house; engine house; and car parking facilities.

Extensions to Barclays Bank at Hanley will cost £280,000. These cover demolition of existing adjoining shop premises and erection of a two-storey extension to existing premises and alterations within the existing bank.

The company will erect 21 dwellings at Cambridge Drive for the Borough of Newcastle-under-Lyme technical services department. Value of the work is £340,000 which takes in services and external works.

Major scheme in the overall total is a £1.8m contract at Griffiths Crossing, Cambridgeshire, for the erection of second phase to complete the National Outdoor Pursuits Centre building and Road.

associated works for the Sports Council for Wales.

At Cannock, Staffordshire, the company will erect two-bedroom, three-person bungalows in traditional construction with 'budding' and external works for Cannock Chase District Council.

### More for Manston

MEMBER OF the Espley-Tyres Property Group plc, Manston (Contractors), announces new work worth over £2.5m.

The company has already commenced the construction of 150,000 sq ft of industrial and retail accommodation on Wellington Street, Leeds, for Counters, This forms part of a major development lying between the Yorkshire Post headquarters and the City Station.

### Earthworks

LONDON- and Northern Group's Essex-based earthmoving specialist, C. A. Blackwell Contractors, has been awarded a £1.5m earthworks contract for the A10-M1 junction of the M25 London Orbital Pursuits Centre building and Road.

### £10m scheme £8m restorations

DUKA (part of Second London Wall) has placed a £10m contract with Costain Construction to build an hotel and office complex in Reading, Berkshire.

Scheme covers a Ramada Hotel and separate office block in Oxford Road, and comprises the construction of the complex, lifts, mechanical and electrical and air conditioning installations, finishes, suspended plaza, roadworks, landscaping and associated external works.

A WELL-KNOWN facade overlooking Hyde Park near Marble Arch is the Cadbury Schweppes group headquarters at Connaught Place, London, W1, which is to be revitalised under an £8m refurbishment project to be undertaken by Mowlem.

Much of the 19th century building's internal structure will be demolished, while certain "listed" rooms and staircases will be retained.

External walls will be upheld and underpinned, and a new reinforced concrete structure on six floors built within. The roof will be replaced and the facade restored to its former glory.

Operations include installation of services to provide air conditioned offices and flats with a floor area of 7,870 sq metres and, Mowlem says, all the offices and residential areas will be finished to a high standard.

### Major civils in Bahrain

WORK TO be carried out for the Arab Iron and Steel Company by John Howard and Company will provide full marine facilities for a 4m tonne per annum pelletizing plant.

The construction of a deep water jetty and associated civil works is worth \$8m to the British company which will create a piled jetty approach 145 metres long, a piled jetty head 300 metres long by 35 metres wide and two piled dolphins.

All these structures will be decked with reinforced concrete and ancillary works embrace the installation of fenders, bollards and similar facilities and some work on the existing rock protection bund.

Some 670 tubular steel piles—800mm and 100mm in diameter and up to 30 metres long—will be driven and 34,000 cubic metres of concrete placed.

Engineer for the client is the Kuwait Engineering, Operation and Management Company (KENOMAC).

Howard, which has been established in Bahrain for the past 10 years, will make an immediate start on the project which is scheduled for completion in 18 months.

### John Mowlem at Drax

TWO CONSTRUCTION contracts, together worth £24m, will be carried out at the new Drax power station near Selby, North Yorkshire, by John Mowlem and Co.

A £11m scheme installs a one-km-long purge pipeline to draw water from the river Ouse and take it to sedimentation tanks. Acting as the main water feeder for the station's cooling tower, it will be 1.4 metres in diameter and laid in trench.

The other £13m worth consists of making modifications to Drax's existing control room while it continues in use. This involves new staff amenities, mess rooms and offices within the three-storey control room and strengthening the existing roof in steel frame to allow new mechanical and electrical plant to be installed by other contractors.

### Warehouse

A MAJOR warehouse scheme in north London is to be developed under a £3m contract announced by Hunting Gate which is to start work soon in Garman Road, Tottenham, N17.

Outline planning permission has been obtained for a wholesale cash and carry complex totalling 110,000 sq ft, pre-let to Clarke Stores (London), distributor of chemist and household goods.

The development will be undertaken on land previously owned by the Gas Board and is scheduled for completion within nine months.

### Mowlem Arm in U.S.

IN LINE with its declared policy at the time of its recent rights issue "to seek further acquisition opportunities in areas related to existing business" the Mowlem Group has agreed to acquire another U.S. company for its MEP engineering products subsidiary.

This is CPN Corporation (Campbell Pacific Nuclear), a California-based company making and selling instruments based on advanced nuclear technology with micro-processors most of which are used in construction and agriculture for moisture and density testing.

### Work force boosted

ENSURING EMPLOYMENT for around 170 people during the next 18 months is Whatlings' announcement of new work worth over £5m.

The Scottish based company's subsidiary, Whatlings (Building) says its largest deal this week is valued at £2.5m and is for 16 advance factory units for East Kilbride Development Corporation. These vary in size from 540 square metres to 1,350 square metres, with a total floor area of 17,070 square metres.

For Ammandale and Eskdale District Council, the company is to build 39 local authority houses replacing post-war pre-fabs on a site at Eastriggs, near Gretna. Value of the homes is £800,000.

Health Centres are being constructed at Easterhouse and Govanhill (for Greater Glasgow Health Board) and consist of two storey building each with surgeries and facilities for remedial and nursing care, with a total value of £2m.

### New jobs at Allerton

TWO ORDERS, together worth £2m to Allerton Industries, signify the first real expansion experienced by the company during the current recession, guarantee an active winter and, says the company, the first serious increase in employment for some time.

Sir Robert McAlpine and Sons has subcontracted Allerton to design, supply and erect all structural steelwork for "Project Dreadnought"—a new factory and offices for Vickers at Newcastle upon Tyne.

Similar work from SETE Consultants and Services is for a new refinery complex in Saudi Arabia. This is seen by Allerton as reflecting the company's continued ability to successfully compete for major steel fabrication contracts throughout the world.

**Through thick and thin, Sparrows travel far and wide.**

It's no accident that Sparrows are around today to serve the building, civil engineering, offshore, petrochemical and allied industries.

Years ago we made a series of commitments to the market which ensured that however difficult trading conditions became, they could still call on our services.

One such decision was to travel far and fast to turn ourselves into truly international lifting specialists, which is why we have business out of depots as far afield as Houston (Texas) and Al Khobar (Saudi Arabia) and a joint venture with Montalevy (France) to spread the load when work is hard to find at home.

It wasn't just a matter of getting heavy equipment to wherever it was needed almost anywhere in the world. We had to gear ourselves up to handle shipping, insurance, legal, financial and other transactions - and we had to supply the men whose expertise is the key to the whole operation.

It was a hard sweat at the time, but it's paying off today because we are now highly experienced in sending our men abroad and that must be good news not only for us but for international customers.

But you don't have to travel far and wide to find out more about our services both at home and abroad - as a first step contact any of our depots.

**SPARROWS WAY OUT FRONT**

Head Office: SPARROWS CRANE HIRE, LOWER WENTWORTH ROAD, SOUTH BAZZETT, THE WENTWORTH, STURGEON AND PUGH BUILDING, STURGEON ROAD, LONDON E15 4JH. Tel: 01-552 2222. Branches: 01-462 5555, 01-462 5556, 01-462 5557, 01-462 5558, 01-462 5559, 01-462 5560, 01-462 5561, 01-462 5562, 01-462 5563, 01-462 5564, 01-462 5565, 01-462 5566, 01-462 5567, 01-462 5568, 01-462 5569, 01-462 5570, 01-462 5571, 01-462 5572, 01-462 5573, 01-462 5574, 01-462 5575, 01-462 5576, 01-462 5577, 01-462 5578, 01-462 5579, 01-462 5580, 01-462 5581, 01-462 5582, 01-462 5583, 01-462 5584, 01-462 5585, 01-462 5586, 01-462 5587, 01-462 5588, 01-462 5589, 01-462 5590, 01-462 5591, 01-462 5592, 01-462 5593, 01-462 5594, 01-462 5595, 01-462 5596, 01-462 5597, 01-462 5598, 01-462 5599, 01-462 5600.



## TECHNOLOGY

## A 20-year car for all seasons

BY GEOFFREY CHARLISH

**RESEARCH HAS** built and demonstrated a small car in which the plastic content has been nearly doubled. The resulting increased resistance to corrosion is expected to give the car a life of some 20 years.

There are no plans to produce the car, which has better doors, roof and boot of special engineering plastics, till the late 1980s.

Several factors will influence the decision, including the relative cost of the overall plastic and steel approaches (materials and techniques), the effect upon labour forces of both steel and car plastics, and the acceptability of plastic bodywork to the car-buying public.

Fiat believes that as hydrocarbon fuel costs continue to rise in the coming two decades, the prices of the kinds of plastics used in the car will rise more slowly than that of steel, which uses much more energy in its production. The cost of these "high-end" plastics reside much more in the processing than in the basic raw materials.

The company believes that plastics will prove acceptable to the public on the basis of zero corrosion alone, giving the car a sales edge as soon as it enters the market.

Mr P. Scolari, who is director of research at Fiat, set three main objectives for the development car.

First, to simplify assembly operations on the line, he said, "we wanted to reduce the weight to improve fuel consumption and make the car more durable through the anti-corrosion properties of the plastics."

In fact, a 10 per cent weight reduction has been achieved, yielding 6 to 7 per cent improvement in consumption.

Fiat has already been using 15 per cent by weight of plastics in its cars—more than any other European manufacturer. In the new car, known as VSS (the initial letters of the Italian for "experimental sub-system car"), the percentage has been pushed up to 25.2.

Based on the car's construction, a box section frame to which the plastic components

are either bonded or bolted. This cage of formed steel sheet provides basic strength so that it can then be "dressed" with plastics front section, doors, hood and roof to give a number of body style options from the same assembly line.

When it comes to model retooling, even if major alterations are involved, the front section, rear, and even the body sides can be changed without having to modify steel pressing equipment and welding lines, obviating additional tooling costs. In addition, the plastics materials allow styling shapes that are difficult to achieve in sheet steel.

The new car is the "plastic" equivalent of Fiat's Ritmo model; a small car was chosen because of the added significance of weight compared with larger vehicles. All the components have been designed using CAD techniques with finite element analysis and a variety of materials has been employed.

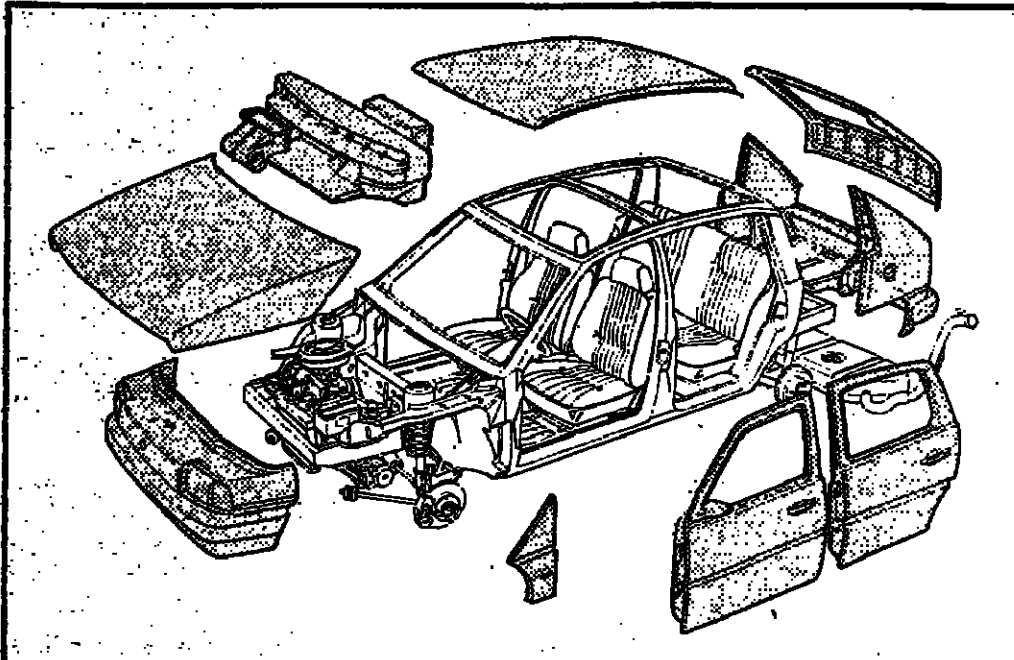
For example, the front end of the vehicle is constructed in polycarbonate which has been found to deform in the event of limited impact without incurring permanent damage.

In the normal car, four elements usually make up the engine compartment: an outer bonnet skin, inner bonnet structure and the two wings. On the VSS the four parts have been combined into one moulding which also includes the air scoop. The material is a polyester resin reinforced with glass fibre; thickness is 3 mm. The weight has been reduced to 12 kg, compared with over 17 kg for a similar unit from steel.

For the doors, unsaturated polyester (SMC) has been used. This is a somewhat more flexible material (over three times the flexural modulus of polycarbonate); it also has more tensile strength and is less likely to elongate under load.

Each door is moulded in two half shells, bonded at the edge, and a steel inner cross member is built in to give more strength and provide suitable fixing for hinges and window winders.

At the rear end polycarbonate is again employed for boot floor, rear cross member and bumper, giving rear impact absorption. The rear hatch however, is made from SMC, bonded to the window to give torsional stability.



FIAT's "plastic" development car, the VSS, showing how the moulded plastic parts (shaded), are prepared off-line and then bolted or bonded to a steel "cage."

All of these sub assemblies can be built separately and sent complete to the final assembly line where they could be put together by robotics using bolting or bonding.

The parts can be painted separately, or pre-pigmented plastics can be employed. Alternatively, the car can be assembled and painted carried out on complete bodies before

the mechanical units are assembled. Welding is greatly reduced, being necessary only on the steel cage. The number of welds has dropped from 3,000 to 1,800 compared with the Ritmo. Assembling the car takes five hours less than the all-steel version.

With the steel cage zinc coated there is nothing in the

bodywork of the car to corrode. With improved fuel consumption from lower weight, and the added bonus of natural sound deadening of plastic panels as opposed to steel, the car when it comes to the market should create considerable interest.

It is the radical re-organisation of production that may prove to be Fiat's main headache.

## Stroke of a key and a VDU keeps the form buyer in the picture

A NEW and faster method of producing business forms has emerged through the adaptation of computer typesetting equipment. It is being offered by ComputerComp, a Birmingham company which is a subsidiary of Standard Continuous, a business forms specialist.

The equipment, developed by Xenotron, a British company, in conjunction with ComputerComp, can be used on the "front end" of most computer type setting equipment, such as the Lasercomp System manufactured by the Monotype Corporation of the U.S.

Everything that has been traditionally regarded as difficult, such as round corners,

reverse headings, screens and tints, can now be included in designs at the stroke of a key," ComputerComp said.

Mr Tony Wall, the company's managing director, said he had been closely involved with Xenotron in the final stages of software development. He said: "This helped to ensure that the Xenotron equipment meets all the demands of modern business form production."

The forms are drawn up on a visual display unit, allowing a customer to be closely involved with design if he wishes, particularly if there are complex aspects of the business form concerned.

Mr Wall pointed out that increasing numbers of companies sought more distinctive forms for invoicing, remittance advance and other purposes.

The service offered is a forms design and setting operation incorporating, at no extra cost, any of the features associated with the new style of forms appearing in industry," Mr Wall said.

Form origination is about to undergo dramatic and long overdue change. Standard Continuous believes. It considers the new development to be the most significant innovation the trade has seen for several years. "We are, therefore, investing heavily in this new concept," it said.

## Have a happy day in your talking lift

RESEARCH HAS shown that one in two people have one phobia or another that is heightened when riding in passenger lifts, says Otis Elevator Company.

This is just one of the reasons why its new Elevonic 401 has incorporated speech synthesis—in essence, taught miniature semiconductor chips to talk reassuringly to lift users.

Apart from safety messages, such as "Please stand clear of the closing doors," or "This elevator is needed for an emergency, please exit when the doors open," and "Do not be alarmed, we are experiencing a temporary power interruption," the lift can wish travellers a happy day, give them a weather check and reminder to go back and retrieve an umbrella, or inform them that they're running five minutes late.

**Transatlantic**

A supreme advantage for the blind using the lift on their own is that they have the vocal confirmation of the floor number announcement.

A male voice is used in the system because it is claimed that its lower tones are more easily heard by persons with hearing difficulties, and it is assumed that the male voice range is less complicated than a female voice range to reproduce, claims Otis.

The voice is, of course, totally transatlantic (which confused English users of the first speak and spell electronic toy). However, when the new product has been distributed worldwide its talking chip will communicate in any tongue or language to fit its permanent home, and can then also be programmed to make any announcements relevant to its role in hotels, apartment blocks, office complexes, department stores, and so on.

Another operating feature transforms the lift into a visual information centre. This is a 16-character, segmented alphanumeric digital display system built into the Elevonic's angled

car-operating panel. This can flash the floor index, time, weather, news information and any number of custom advertising or public service messages.

The new control panel has also been designed as an aid to the physically handicapped. With all controls and floor buttons no more than 54 inches from the floor of the lift, wheelchair-bound passengers have easy access to what Otis describes as more readable buttons and tactile markings.

A "special emergency service" characteristic is available, and when activated in a crisis the lift returns to the main lobby floor where it remains with the doors open.

Otis claims that its latest machine is the most advanced lift control system yet produced for prestige offices and hotels complexes, offering more efficient lift service—up to 25 per cent less waiting time.

The Elevonic promises more reliability (aerospace components—pre-aged and computer tested) its built-in diagnostic meaning quicker "trouble-shooting" and easier adjustment.

Other significant benefits are energy savings of up to 30 per cent and new ergonomic controls giving passenger comfort and security, specifically catering for the handicapped, and optional security modules which restrict access to selected floors.

Previously, lift modifications to solve the problems of one group of users were frequently perceived as an inconvenience to another group.

Otis says that its new design package with its basic functions meets the needs of all groups, making an important contribution with the innovative visual information display and speech capability that help to eradicate the traumas of lift travel and, actually, make an elevator trip safer than a run up the stairs.

More technical information from Otis in the UK at 43, Clapham Road, London, SW9 0JL (01-735 9131).

DEBORAH PICKERING

Atlas Copco  
Compressed Air Technology

## Surrey University satellite in orbit

SURREY University's UOSAT satellite, after several NASA caused delays, is now in orbit. Although the launch was successful, there were some telemetry problems in the first three orbits. These were corrected and strong signals are now being received.

The satellite is in a rather complex tumbling motion in a polar orbit at a height of about 330 miles. It is revolving about four times a minute but the university is hoping to stabilise the attitude.

## Inundated

The university says that since the launch its switchboard (0433 71281) has been inundated with calls from amateurs and schools wanting more information. But it will be about three to four weeks before the television camera is switched on.

With an orbital period of 95 minutes, advancing by nine minutes on each pass, the satellite is transmitting for Britain at 13.13 and 14.45 hours in daylight.

At present telemetry is on 300 Baud on ASCII for amateurs and schools interested in text format transmissions.

MAX COMMANDER

## Anglo American Investment Trust Limited

(Incorporated in the Republic of South Africa)

## INTERIM RESULTS FOR THE SIX MONTHS ENDED SEPTEMBER 30 1981

With reference to the interim report advertised on Friday, 9th October, 1981 attention is drawn to the corrected tabulation of note 3 below:

3. Particulars of the investment in the listed associated company, De Beers Consolidated Mines Limited, are as follows:

	30.9.81 R000	30.9.80 R000	31.3.81 R000
Market value	530 573	1 243 431	895 573
Carrying value	374 343	283 597	330 049
Appreciation	156 230	959 834	565 524

October 10 1981

## Debenhams Limited

Unaudited Results for the 28 weeks to 15th August, 1981

	28 weeks to 15th August 1981 £'000	28 weeks to 16th August 1980 £'000	52 weeks to 31st January 1981 £'000
<b>HISTORIC COST</b>			
Sales (including VAT)	307,821	258,468	582,111
Trading profit	2,892	3,820	24,633
Cost of finance	(1,784)	(2,640)	(4,362)
Trading profit after cost of finance	1,108	1,180	20,271
Other items	—	—	4,744
Profit before taxation	1,108	1,180	25,015
Taxation	(1,345)	(1,215)	(3,802)
(Loss)/profit after taxation	(237)	(35)	21,213
Preference dividends	(43)	(43)	(86)
(Loss)/profit attributable to ordinary shareholders	(280)	(78)	21,127
Earnings per share	(0.2p)	—	15.8p
Earnings per share on nil distribution basis	0.7p	0.8p	18.4p
<b>CURRENT COST</b>			
Current cost operating profit/(loss)	767	(1,337)	17,639
Cost of finance	(1,784)	(2,640)	(4,362)
Gearing adjustment	442	1,346	1,666
Other items	—	—	526
Current cost (loss)/profit before taxation	(575)	(2,631)	15,469
Earnings per share	(0.4p)	(2.8p)	8.7p

## Notes:

- "Other items" which include profits on disposal of properties, the cost of business closures, redundancies and other non-trading items are dealt with in the annual accounts.
- Taxation represents advance corporation tax and unrecovered overseas taxation.

## Brush engine test cells

UP TO one third savings in overall costs are claimed by the control gear division of Brush Electrical Machines for its complete engine test cells which it is starting to market. This follows its success with the regenerative electrical dynamometer that combines accurate fast testing with a significant degree of energy recovery.

The engine to be tested is put on a trolley outside the cell and fuel, lubricating oil and cooling water are connected through a matchplate, to which a flywheel adaptor is fitted.

The trolley is pushed into the cell and presented to the end of the bed plate. It engages with a hydraulic piston that draws the trolley into complete engagement with the dynamometer, to which it is connected automatically.

Brush is one of the few, if not the only company making floor-mounted regenerative dynamometers as distinct from the more conventional swinging frame dynamometer. It can now offer turnkey packages to include all mechanical handling and in-cell services.

A microprocessor can control the test cycle, monitor engine parameters during tests and record results. The lubrication system has a quickly replaceable filter to deal with oil contamination from new engines. The microprocessor automatically meters the fuel and a smoke measuring device is attached to the exhaust system.

More from Brush Electrical Machines, PO Box 18, Loughborough, Leicestershire.

## Portescap

## micromotors

PORTESCAP UK has announced two new 35 mm micromotors. Basic models are the Faulhaber 3558 and 3541, each available at four standard voltages.

Portescap claims that both models cost about 20 per cent less than present 55 mm diameter units. The cost reduction has been achieved without any sacrifice in performance by using improved production techniques and sintered sleeve bearings. More on 0734 861455.

## Toggle-action

## 3-way bolt

DESIGNED for doors, panels, flaps, bonnets and hatches, the three-way Protex Catchbolt has a toggle action which pulls a spring-loaded bolt into the keeper. The tapered nose of the bolt engages under a claw to give a "pull down" at the finish of the closing movement.

Protex Fasteners (Redditch, Worcs, 0527 63231) says that the fastener is available in mild or stainless steel with safety catch or padlock.



Sime Darby Berhad

## NOTICE OF MEETING

NOTICE IS HEREBY GIVEN that the Third Annual General Meeting of Sime Darby Berhad will be held at the Regent Ballroom, The Regent of Kuala Lumpur Hotel, Jalan Imbi, Kuala Lumpur, Malaysia on Thursday, 5th November 1981 at 11.30 a.m. for the following purposes:

To receive and adopt the Report of the Directors and the Accounts for the year ended 30th June 1981 and the Report of the Auditors thereon.

To declare a final dividend for the year ended 30th June 1981

To elect the following Directors:

Tun Tan Siew Sin S.S.M., J.P.  
Tari Sri Taib bin Haji Andak P.M.N., S.M.I., S.P.M.I.  
Michael Wong Pakshong

To reappoint Price Waterhouse & Co. as auditors of the Company and to authorise the Directors to fix their remuneration

## AS SPECIAL BUSINESS

To consider and, if thought fit, pass the following resolution as an ordinary resolution:

## ORDINARY RESOLUTION

That the Company capitalise the sum of \$71,927,866, being part of the balance standing to the credit of the Capital Reserve Account and, accordingly, that the Directors be authorised and directed to appropriate such sum to the shareholders registered on the Registers of the Company as at the close of business on 22nd October 1981 in proportion to the numbers of shares then held by them respectively and to apply such sums on their behalf in paying up in full at par 143,855,732 unissued shares of 50 cents each in the capital of the Company, such shares to be allotted and distributed, credited as fully paid to such shareholders in the proportion of one such share for every four shares then held, and that such shares will not participate in the final dividend to be paid on 28th November 1981 but otherwise shall rank pari passu in all respects with the existing shares of the Company, and that the Directors be authorised to dispose of any fractions arising from this issue and to use the proceeds for the benefit of the Company.

Kuala Lumpur  
12th October 1981

## NOTE:

Any member of the Company entitled to attend and vote at this meeting is also entitled to appoint one or more proxies to attend and vote in his stead. A proxy need not be a member of the Company.

By Order of the Board  
WONG TET ONN  
Company Secretary

## Public Works Loan Board rates

Years	by EIP <sup>1</sup>	At maturity <sup>2</sup>	Non-quota loans A <sup>3</sup> repaid at maturity <sup>2</sup>	by EIP <sup>1</sup>	At maturity <sup>2</sup>
Up to 5	161	161	17	171	171
Over 5, up to 6	161	162	17	171	171
Over 6, up to 7	17	17	17	171	17
Over 7, up to 8	17	17	17	171	17
Over 8, up to 9	17	17	17	171	17
Over 9, up to 10	17	17	17	171	17
Over 10, up to 15	161	161	161	171	161
Over 15, up to 25	161	161	161	161	161
Over 25	161	161	161	161	161

<sup>1</sup> Non-quota loans B are 1 per cent higher in each case than non-quota loans A. <sup>2</sup> Equal instalments of principal. <sup>3</sup> Repayment by half-yearly annuity (fixed equal half-yearly payments to include principal and interest). <sup>4</sup> With half-yearly payments of interest only.

## LOCAL AUTHORITY BOND TABLE

Authority	Annual Interest	Life
(telephone number in parentheses)	gross pay-Interest	Minimum of sum bond
Knowsley (051 543 6555)	14 1/2	5-year 1,000 1-3
Wyre Forest DC (0583 3814)	14 1/2	5-year 5,000 6-10



and Dublin. TIME OFF



**NEW YORK**

1981		Oct. 9	Price
High	Low		HK \$
38.75	13.5	Cheung Kong.....	2.5
3.55	2.80	Cosmos Prop.....	2.5
10.60	7.90	Cross Harbour.....	1.50
176	98.5	Hong Seng Bank.....	110
8.75	4.20	HK Electric.....	4.90
10.80	5.00	HK Kwong Wah.....	5.55
14.8	9.5	HK Land.....	5.90
30.1	12.8	HK Shanghai BK.....	14
22.70	16.8	HK Telephone.....	18.10
23.5	15	Hutchison Wds.....	14.50
27.70	12.3	Jardine Math.....	14.50
7.30	4.05	New World Dev.....	5.10
7.60	4.15	Oversea Trust Bk.....	10.50
20.5	30	PAC.....	10.50
9.10	4.97	Swire Pac A.....	12.80
6.0	3.55	World Int. Hlds.....	8.75
5.40	2.90	Worldwide Int. Hlds.....	2.50

1981		Oct. 9	Price
High	Low		HK \$
38.75	13.5	Cheung Kong.....	2.5
3.55	2.80	Cosmos Prop.....	2.5
10.60	7.90	Cross Harbour.....	1.50
176	98.5	Hong Seng Bank.....	110
8.75	4.20	HK Electric.....	4.90
10.80	5.00	HK Kwong Wah.....	5.55
14.8	9.5	HK Land.....	5.90
30.1	12.8	HK Shanghai BK.....	14
22.70	16.8	HK Telephone.....	18.10
23.5	15	Hutchison Wds.....	14.50
27.70	12.3	Jardine Math.....	14.50
7.30	4.05	New World Dev.....	5.10
7.60	4.15	Oversea Trust Bk.....	10.50
20.5	30	PAC.....	10.50
9.10	4.97	Swire Pac A.....	12.80
6.0	3.55	World Int. Hlds.....	8.75
5.40	2.90	Worldwide Int. Hlds.....	2.50

High	Low	Yen	
1,020	748	Ajinomoto	800
911	480	Amiga	658
858	450	Asahi	658
845	450	Bridgestone	458
1,070	710	Canon	1,100
770	600	Daiichi	622
775	599	DKBO	400
500	255	Daigaku PFS	250
401	255	Daiwa House	368
316	350	Daiwa Seiko	400
316	255	Exxon	421
491	801	Eisai	836
491	399	Fuji Bank	399
520	399	Fuji Photo	250
520	800	Fujisawa	1,050
6,970	4,910	Fujiyoshi Fanuc	5,900
650	491	Hitachi	550
650	461	Hasegawa	568
918	537	Heiwa Ri East.	586
918	710	Hitachi	710
1,120	710	Honda	850
1,280	511	Honda Food	885
1,120	610	Honda	710
429	320	Itchic Inc.	545
586	399	Ito Ham.	415
586	710	Yokado	710
2,510	1,500	JACC	645
2,510	2,880	JAL	2,400
367	210	Japan	210
367	270	Kajima	355
367	482	Kao Soap	510
367	619	Kashiyama	729
335	428	Kikkoman	588
439	408	Kirin	417
1,350	915	Komatsu	918
1,350	915	Komatsu P/F	560
755	503	Konatsu P/F	418
661	503	Konishiroku	360
541	428	Kumada	360
451	325	Kumagai	352
308	3,950	Kyocera Ceramic	3,180
450	1,100	Li-ion	1,050
450	1,040	Maeda Co.	630

9,519	850/Makita	867
1,010	151/Maruben	320
1,030	725/Marui	820
1,950	785/Matsushita	350
490	300/Mitsui Bussan	350
490	300/Mitsui Bank	399
759	550/M'ishi Corp	634
488	759/Mitsui Bussan	634
329	301/Mitsui RI East	424
428	185/MHI	272
385	290/Mitsui Co.	515
502	455/Mitsui Koshi	415
490	408/MK Insulators	1,200
1,040	671/Nippon Gakki	684
510	726/Nippon Meat	2,400
1,010	680/Nippon Shinnan	535
828	139/Nippon Steel	201
4,950	5,810/Nippon Suisan	4,000
1,250	700/Nissan Motor	840
450	515/Nissin Flour	342
286	142/Nissin Steel	591
345	278/N.Y.K.	357
1,770	1,010/Olympus	1,200
1,010	2,360/Pioneer	2,300
4,500	900/Reown	748
783	231/Rich	515
783	279/Sanyo Elect.	768
275	231/Sapporo	243
783	505/Sekisui Prefab	840
1,010	1,010/Shiro	1,010
841	791/Shiseido	820
5,780	5,020/Sony	2,450
351	251'S. S. Tomo Marina	287
730	535/Taihei Dengyo	542
774	505/Taisa Pharm	600
1,050	615/Takeda	856

1,290	515 Keteilin	270
570	565 Teikoku Oil	881
565:	385 TBS	401
801:	452 Tokyo Marine	479
495:	825 Tokyo Slect. Perf.	593
132:	105 Tokyo Gas	107
643:	494 Tokyo Sanyo	495
526:	510 Tokai Corp.	401
526	214 Toshiba	401
526	410 TOTO	470
495:	390 Tokyo Seiki	605
1,640:	234 Toyota Moto.	1,150
4,380	240 Victor	735
860:	571 Wacool	1,350
1,210:	510 Yamaichi	555
860	115 Yamazaki	555
372:	272 Yatsuda Fire	399
705	497 Yatsugawa Edge	561

SOUTH AFRICA		
1981		Price
High	Low	Rand
4.5	2.90 Abercorn	9.40
10	7.40 AS & CI	4.80
18.45	14.40 Anglo Am.	18.1
13.50	9.00 Anglo Am. Gold.	12.2
9.55	5.00 Anglo Am. Gold.	5.45
11.2	9.10 Barlow Rand	10.45
55.5	49.35 Buffels	56.56
58.5	52.00 Capricorn	59.9
2.75	1.90 Currie Finance.	2.75
20.90	18.50 De Beers	8.75
27.50	22.00 De Beers	26.45
11.00	3.55 F&S Gold	57
65.00	34.0 Gold Fields SA.	110
11.00	9.00 Highland Steel	5.45
6.9	5.70 Hlts	8.20
43.00	20.00 Kloof	43
6.65	5.50 Medbank	6.80
5.7	4.50 Newmont	5.7
3.7	2.80 Protea Hldgs	3.35

3.55	2.50	Unisc.....	3.35
<b>Financial Rand US\$0.764</b>			
<b>(Discount of 28%)</b>			
<b>BRAZIL</b>			
1981		Oct. 9	Price
High	Low		Crux
1.90	0.76	Acesita .....	1.20
6.98	3.05	Banco Brasil .....	6.88
1.57	1.40	Banco Itau .....	1.55
3.40	1.80	Logos. Min. ....	3.40
4.21	2.80	Logos. Amer. ....	4.10
5.45	2.12	Petrobras PP .....	5.45

1.70	1.05 Pirelli OP.....	1.20
9.95	2.05 Souza Cruz.....	9.95
7.50	4.90 Unipar PL.....	6.10
10.50	4.50 Vale Rio Doce.....	10.50

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NOTES:—Prices on this page are as quoted on the individual exchanges and are last traded prices. \$ Dealings suspended, x0 Ex dividend, x0 Ex scrip issue, xR Ex rights, xA Ex all.

## Tourism plea to Borders

LONGER shopping hours and improved services could turn tourism in the Scottish Borders into a £50m-a-year business, Mr. Al. n Devereux, chairman of the Scottish Tourist Board, said at Kelso when he launched the

first-ever "Glorious Tweed Festival," on Saturday.

Mr Devereux, who 'switched on the floodlights at Floors Castle, Kelso, said the region already earned £16m a year from tourism, but this could be doubled or trebled if more people could be persuaded 'to stay instead of passing through.

He said: "You have the opportunity of developing a 50-

opportunity of developing a 32-week season. The festival, which includes a salmon-fishing contest, lasts until October 24.

12.11	5.55 Rembrandt.....	7.5
4.8	3.00 Rennie's.....	4.75
7.00	4.9 Runc Plat.....	6.20
2.80	2.00 Sage Hedges.....	2.50
5.05	3.25 SA Brew.....	5
19.75	15.00 Tiger Cats.....	19.75
3.55	2.50 Unisee.....	3.55

**Financial Rand US\$0.762**  
(Discount of 28%)

**BRAZIL**

1981			
High	Low	Oct. 9	Price Cruz
1.90	0.76	Acacia.....	1.28
6.96	3.05	Banco Brazil.....	6.88
1.57	1.40	Runc Itau.....	1.55
5.0	1.80	Belo. Min.....	5.40
4.21	2.80	Logos Amf.....	4.10
5.45	2.12	Petrobras PP.....	5.45
5.70	3.05	Franca.....	1.20
9.95	2.05	Souza Cruz.....	9.95
7.50	4.90	Unip PE.....	6.10
10.50	4.50	Vale Rio Doce.....	10.50

**NOTES**—Prices on this page are as quoted on the individual exchanges and are last traded prices. 2 Dealings suspended, x0 Ex dividend, x0 Ex scrip issue, x Ex rights, x Ex all.

**Tourism plea to Borders**

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He said: "You have the opportunity of developing a 53-week season. The festival, which includes a salmon-fishing contest, lasts until October 24.

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opportunity of developing a 52-week season. The festival, which includes a salmon-fishing contest, lasts until October 24.



# Malayan Tin shareholders approve MMC merger

BY WONG SULONG IN KUALA LUMPUR

**SHAREHOLDERS** of Malayan Tin Dredging voted over the weekend to approve the merger proposed earlier this year with Malaysia Mining Corporation. The deal will create the world's largest tin mining group, whose shares will be listed from today in Kuala Lumpur, London and Singapore.

The new company, to be called Malaysia Mining Corporation Berhad, will control 28 of the 55 tin dredges in Malaysia, and will produce some 17,700 tonnes of metal a year, or 23 per cent of the nation's tin output.

It will also have mining interests in Thailand, Nigeria and Australia, where it controls the publicly-listed Ashton Mining, which in turn owns a 38 per cent stake in the giant Ashton diamond venture in Western Australia.

## Alfa Romeo forecasts further loss for 1981

By Dai Hayward in Wellington

**THREE OVERSEAS** companies have said they are interested in taking a share of the proposed NZ aluminium smelter at Aramoa following the decision last week by Alusuisse to withdraw from the project.

The major shareholder, Fletcher-Challenge which holds 50 per cent of the project says it has already received inquiries from three companies interested in replacing Alusuisse.

The proposed smelter, on which construction is set to start next year, is estimated to cost NZ\$550m (U.S.\$344m).

# CURRENCIES, MONEY and GOLD

A minefield of information

BY COLIN MILLHAM

CURRENCY analysis can be something of a minefield for the unwary, with new factors suddenly exploding on to the scene, causing sharp fluctuations on the foreign exchanges.

Last week there was plenty to occupy the mind, ranging from interest rate changes to fears about oil supplies, and from political row to currency revaluations. A revaluation of the D-mark against most of its partners in the European Monetary System had been expected for some time, while the cut in the Bundesbank special Lombard

rate to 11 per cent from 12 per cent may help to prevent the German currency returning to the top of the system again too quickly.

The French authorities also took advantage of the changed circumstances to reduce domestic interest rates, as the French franc moved to the top of the EMS following devaluation and the easing of the dollar interest rate cuts. Paris call money fell to 17 per cent from 18 per cent on Friday after a reduction in Treasury bill yields at the previous day's tender.

British monetary policy brought the differences between the various wings of the Conservative Party into sharp relief, but it appeared to have no harmful impact on sterling, which benefited from various other factors.

North Sea oil reserves took on a new importance, following the assassination of President Sadat and civil unrest in Egypt. Fears about Middle East oil supplies helped the pound, but the major factor remained interest rate differentials. Despite an easier trend in London money market rates, the fall in U.S. rates worked in favour of all currencies, particularly sterling.

Other currencies

Oct 9

Currency	Oct 9	Oct 8
U.S.	1.8500-1.8500	1.8500-1.8500
Canada	2.2250-2.2250	2.2250-2.2250
Denmark	4.80-4.80	4.80-4.80
Belgium	6.80-6.80	6.80-6.80
France	13.20-13.20	13.20-13.20
Italy	1.1700-1.1700	1.1700-1.1700
Spain	16.80-16.80	16.80-16.80
Portugal	20.80-20.80	20.80-20.80
Japan	11.80-11.80	11.80-11.80
Sweden	1.32-1.32	1.32-1.32
Switzerland	1.50-1.50	1.50-1.50

1 UK and Ireland are quoted in U.S. dollars. Forward premiums and discounts apply to the U.S. dollar and not to the individual currency.

## EURO-CURRENCY INTEREST RATES (Market closing rates)

Oct 9	Oct 8	Oct 7	Oct 6	Oct 5	Oct 4	Oct 3	Oct 2	Oct 1	Oct 0
3 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
6 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
9 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
12 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15

SDR linked deposits: one-month 14.14, per cent; three-months 14.14, per cent; six-months 14.14, per cent; one-year 14.14, per cent.

Asian 5 (closing rates in Singapore): one-month 15.15, per cent; three-months 15.15, per cent; six-months 15.15, per cent; one-year 15.15, per cent.

Long-term Eurodollar (two years 15.15, per cent; three years 15.15, per cent; four years 15.15, per cent; five years 15.15, per cent; six years 15.15, per cent; seven years 15.15, per cent; eight years 15.15, per cent; nine years 15.15, per cent; ten years 15.15, per cent).

FT LONDON INTERBANK FIXING (11.00 a.m. OCTOBER 9)

3 months U.S. dollars

bid	offer
16.18	16.16

6 months U.S. dollars

bid	offer
16.18	16.16

The fixing rates are the arithmetic means, rounded to the nearest one-eighth of a bid and offered rates for \$100 quoted by the market to the reference bank at 11 am each working day. The banks are National Westminster Bank, Bank of Tokyo, Deutsche Bank, Banque Nationale de Paris and Morgan Guaranty Trust.

## LONDON MONEY RATES

Oct 9 1981

Category	Rate
Overnight	15.15
7 days notice	15.15
1 month	15.15
3 months	15.15
6 months	15.15
9 months	15.15
12 months	15.15

Local authorities and finance houses seven days' notice, others seven days' fixed. Long-term local authority mortgage rates immediate (two years 15.15, per cent; three years 15.15, per cent; four years 15.15, per cent; five years 15.15, per cent; six years 15.15, per cent; seven years 15.15, per cent; eight years 15.15, per cent; nine years 15.15, per cent; ten years 15.15, per cent).

Clearing Bank Deposit Rates for sums at seven days' notice 15.15, per cent. Clearing Bank Rates for lending 16 per cent. Treasury Bills: Average tender rates of discount 14.8066 per cent.

# Advance by Bouygues in first half

By Terry Dodsworth in Paris

**BOUYGUES**, the French construction company, made net profits of FF8.5m (\$13m) in the first half of this year, an increase of 35 per cent on the same period of last year.

Group sales also rose by a similar amount to FF10.5m, while the order book had progressed to FF17.6bn by October 31, up from FF15.8bn at the same time last year. The depreciation charge amounted to FF8.5m against FF6.8m a year ago.

Bouygues is one of the largest of the numerous international French construction companies, and has been expanding rapidly overseas in recent years.

In April it won a FF8.8bn contract to build a new university at Riyadh in Saudi Arabia in partnership with Blount of the U.S.

## Asahi Glass in Quebec joint venture

TOKYO — Asahi Glass Company has been asked by the Quebec Government to take part in a joint venture to build a soda ash factory near the mouth of the St Lawrence River.

Asahi Glass, Japan's biggest glass manufacturer, will launch a feasibility study on the project, which is designed to produce 400,000 tonnes of soda ash annually for Canadian and Japanese consumption.

Japan produces about 1.36m tonnes of soda ash a year for glass, pharmaceuticals, and other products from industrial salt imported from Australia, Mexico and China.

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Other currencies

Oct 9

Currency	Oct 9	Oct 8
U.S.	1.8500-1.8500	1.8500-1.8500
Canada	2.2250-2.2250	2.2250-2.2250
Denmark	4.80-4.80	4.80-4.80
Belgium	6.80-6.80	6.80-6.80
France	13.20-13.20	13.20-13.20
Italy	1.1700-1.1700	1.1700-1.1700
Spain	16.80-16.80	16.80-16.80
Portugal	20.80-20.80	20.80-20.80
Japan	11.80-11.80	11.80-11.80
Sweden	1.32-1.32	1.32-1.32
Switzerland	1.50-1.50	1.50-1.50

Other currencies

Oct 9

Currency	Oct 9	Oct 8
U.S.	1.8500-1.8500	1.8500-1.8500
Canada	2.2250-2.2250	2.2250-2.2250
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Belgium	6.80-6.80	6.80-6.80
France	13.20-13.20	13.20-13.20
Italy	1.1700-1.1700	1.1700-1.1700
Spain	16.80-16.80	16.80-16.80
Portugal	20.80-20.80	20.80-20.80
Japan	11.80-11.80	11.80-11.80
Sweden	1.32-1.32	1.32-1.32
Switzerland	1.50-1.50	1.50-1.50

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Belgium	6.80-6.80	6.80-6.80
France	13.20-13.20	13.20-13.20
Italy	1.1700-1.1700	1.1700-1.1700
Spain	16.80-16.80	16.80-16.80
Portugal	20.80-20.80	20.80-20.80
Japan	11.80-11.80	11.80-11.80
Sweden	1.32-1.32	1.32-1.32
Switzerland	1.50-1.50	1.50-1.50

1 Rate given for Argentina is the commercial rate. The financial rate for sterling is 14.581-14.611 and for the dollar 7.500-7.700. \* Selling rate.

## EURO-CURRENCY INTEREST RATES (Market closing rates)

Oct 9	Oct 8	Oct 7	Oct 6	Oct 5	Oct 4	Oct 3	Oct 2	Oct 1	Oct 0
3 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
6 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
9 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
12 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15

SDR linked deposits: one-month 14.14, per cent; three-months 14.14, per cent; six-months 14.14, per cent; one-year 14.14, per cent.

Asian 5 (closing rates in Singapore): one-month 15.15, per cent; three-months 15.15, per cent; six-months 15.15, per cent; one-year 15.15, per cent.

Long-term Eurodollar (two years 15.15, per cent; three years 15.15, per cent; four years 15.15, per cent; five years 15.15, per cent; six years 15.15, per cent; seven years 15.15, per cent; eight years 15.15, per cent; nine years 15.15, per cent; ten years 15.15, per cent).

FT LONDON INTERBANK FIXING (11.00 a.m. OCTOBER 9)

3 months U.S. dollars

bid	offer
16.18	16.16

6 months U.S. dollars

bid	offer
16.18	16.16

The fixing rates are the arithmetic means, rounded to the nearest one-eighth of a bid and offered rates for \$100 quoted by the market to the reference bank at 11 am each working day. The banks are National Westminster Bank, Bank of Tokyo, Deutsche Bank, Banque Nationale de Paris and Morgan Guaranty Trust.

## LONDON MONEY RATES

Oct 9 1981

Category	Rate
Overnight	15.15
7 days notice	15.15
1 month	15.15
3 months	15.15
6 months	15.15
9 months	15.15
12 months	15.15

Local authorities and finance houses seven days' notice, others seven days' fixed. Long-term local authority mortgage rates immediate (two years 15.15, per cent; three years 15.15, per cent; four years 15.15, per cent; five years 15.15, per cent; six years 15.15, per cent; seven years 15.15, per cent; eight years 15.15, per cent; nine years 15.15, per cent; ten years 15.15, per cent).

Clearing Bank Deposit Rates for sums at seven days' notice 15.15, per cent. Clearing Bank Rates for lending 16 per cent. Treasury Bills: Average tender rates of discount 14.8066 per cent.

# Advance by Bouygues in first half

By Terry Dodsworth in Paris

**BOUYGUES**, the French construction company, made net profits of FF8.5m (\$13m) in the first half of this year, an increase of 35 per cent on the same period of last year.

Group sales also rose by a similar amount to FF10.5m, while the order book had progressed to FF17.6bn by October 31, up from FF15.8bn at the same time last year. The depreciation charge amounted to FF8.5m against FF6.8m a year ago.

Bouygues is one of the largest of the numerous international French construction companies, and has been expanding rapidly overseas in recent years.

In April it won a FF8.8bn contract to build a new university at Riyadh in Saudi Arabia in partnership with Blount of the U.S.

## Asahi Glass in Quebec joint venture

TOKYO — Asahi Glass Company has been asked by the Quebec Government to take part in a joint venture to build a soda ash factory near the mouth of the St Lawrence River.

Asahi Glass, Japan's biggest glass manufacturer, will launch a feasibility study on the project, which is designed to produce 400,000 tonnes of soda ash annually for Canadian and Japanese consumption.

Japan produces about 1.36m tonnes of soda ash a year for glass, pharmaceuticals, and other products from industrial salt imported from Australia, Mexico and China.

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Japan produces about 1.36m tonnes of soda ash a year for glass, pharmaceuticals, and other products from industrial salt imported from Australia, Mexico and China.

Other currencies

Oct 9

Currency	Oct 9	Oct 8
U.S.	1.8500-1.8500	1.8500-1.8500
Canada	2.2250-2.2250	2.2250-2.2250
Denmark	4.80-4.80	4.80-4.80
Belgium	6.80-6.80	6.80-6.80
France	13.20-13.20	13.20-13.20
Italy	1.1700-1.1700	1.1700-1.1700
Spain	16.80-16.80	16.80-16.80
Portugal	20.80-20.80	20.80-20.80
Japan	11.80-11.80	11.80-11.80
Sweden	1.32-1.32	1.32-1.32
Switzerland	1.50-1.50	1.50-1.50

Other currencies

Oct 9

Currency	Oct 9	Oct 8
U.S.	1.8500-1.8500	1.8500-1.8500
Canada	2.2250-2.2250	2.2250-2.2250
Denmark	4.80-4.80	4.80-4.80
Belgium	6.80-6.80	6.80-6.80
France	13.20-13.20	13.20-13.20
Italy	1.1700-1.1700	1.1700-1.1700
Spain	16.80-16.80	16.80-16.80
Portugal	20.80-20.80	20.80-20.80
Japan	11.80-11.80	11.80-11.80
Sweden	1.32-1.32	1.32-1.32
Switzerland	1.50-1.50	1.50-1.50

Other currencies

Oct 9

Currency	Oct 9	Oct 8
U.S.	1.8500-1.8500	1.8500-1.8500
Canada	2.2250-2.2250	2.2250-2.2250
Denmark	4.80-4.80	4.80-4.80
Belgium	6.80-6.80	6.80-6.80
France	13.20-13.20	13.20-13.20
Italy	1.1700-1.1700	1.1700-1.1700
Spain	16.80-16.80	16.80-16.80
Portugal	20.80-20.80	20.80-20.80
Japan	11.80-11.80	11.80-11.80
Sweden	1.32-1.32	1.32-1.32
Switzerland	1.50-1.50	1.50-1.50

1 Rate given for Argentina is the commercial rate. The financial rate for sterling is 14.581-14.611 and for the dollar 7.500-7.700. \* Selling rate.

## EURO-CURRENCY INTEREST RATES (Market closing rates)

Oct 9	Oct 8	Oct 7	Oct 6	Oct 5	Oct 4	Oct 3	Oct 2	Oct 1	Oct 0
3 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
6 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
9 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15
12 months	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15

SDR linked deposits: one-month 14.14, per cent; three-months 14.14, per cent; six-months 14.14, per cent; one-year 14.14, per cent.

Asian 5 (closing rates in Singapore): one-month 15.15, per cent; three-months 15.15, per cent; six-months 15.15, per cent; one-year 15.15, per cent.

Long-term Eurodollar (two years 15.15, per cent; three years 15.15, per cent; four years 15.15, per cent; five years 15.15, per cent; six years 15.15, per cent; seven years 15.15, per cent; eight years 15.15, per cent; nine years 15.15, per cent; ten years 15.15, per cent).

FT LONDON INTERBANK FIXING (11.00 a.m. OCTOBER 9)

3 months U.S. dollars

bid	offer
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The fixing rates are the arithmetic means, rounded to the nearest one-eighth of a bid and offered rates for \$100 quoted by the market to the reference bank at 11 am each working day. The banks are National Westminster Bank, Bank of Tokyo, Deutsche Bank, Banque Nationale de Paris and Morgan Guaranty Trust.

## LONDON MONEY RATES

Oct 9 1981

Category	Rate
Overnight	15.15
7 days notice	15.15
1 month	15.15
3 months	15.15
6 months	15.15
9 months	15.15
12 months	15.15

Local authorities and finance houses seven days' notice, others seven days' fixed. Long-term local authority mortgage rates immediate (two years 15.15, per cent; three years 15.15, per cent; four years 15.15, per cent; five years 15.15, per cent; six years 15.15, per cent; seven years 15.15, per cent; eight years 15.15, per cent; nine years 15.15, per cent; ten years 15.15, per cent).

Clearing Bank Deposit Rates for sums at seven days' notice 15.15, per cent. Clearing Bank Rates for lending 16 per cent. Treasury Bills: Average tender rates of discount 14.8066 per cent.

# RECENT ISSUES

63	F.P.	121	95 1/2	43	Johnson Eng. Trust Inc.	43	+3 5/8	7.17.5	5
63	F.P.	90/10	30	34	W.Lon. Private Hedge	29	.....	.....	.....
100	F.P.	90/10	37	37	Marmaduke Self Tr.	37	.....	.....	.....
100	F.P.	180	44	100	Nippon Electric	155	+1	62.55	8.9
100	F.P.	169	14	10	Precious Metals Tr.	100	+1	62.55	8.9
68	F.P.	36/8	10	10	R. F. Kohnold Ref. En.	87	.....	.....	.....
68	F.P.	10/10	98	98	Sci. & Tech. Ind.	98	.....	.....	.....
113	F.P.	21/5	155	155	Sci. & Tech. Ind.	155	.....	.....	.....
113	F.P.	21/5	17 1/2	7	Swissair Systems Ltd.	10	.....	.....	.....
113	F.P.	21/5	18	6	Sw. Reat. Div. Ltd.	6	.....	.....	.....

FIXED INTEREST STOCKS									
Issue price		Amount paid	Latest issue	1981	Stock	Chasing price	+ or -	Dividend	Yield
£	p	£	p	High	Low	£	p	£	p
44	F.P.	187	110	187	110	Amal Dist. Products	10	On, 97	1.15
100	Nil	180	100	180	100	Austin J. L			



## Newwich Union Insurance Group      Sun Life Unit Assurance Ltd.

British Union Assurance Group  
P.O. Box 7, Norwich NR1 3MG. 0603 32200 107 Life Unit Assurance Ltd.  
37, Chiche, London, EC2N 6DU. 0872-299 5284

WUIG (Managed Funds) Ltd.  
Managed Fund 271.7 289.1 +3.8  
Equity Fund 271.7 289.1 +3.8  
Property Fund 176.2 179.2 +1.7  
Income Fund 176.2 179.2 +1.7  
Deposit Fund 140.3 147.3 +0.1

Norwich Union Life Insurance Society  
Equity Investment 75.0 100.0  
Fixed Investment 75.0 100.0  
Property 75.0 100.0  
Income 75.0 100.0  
United States 75.0 100.0  
Miscellaneous 75.0 100.0  
Price as at Dec 31, 1971 287.5

Phoenix Insurance Co. Ltd.  
4-5 King William St., EC4P 4HR. 01-626 9576  
Worth Ass. Co. 124.9 171.5  
Worth P.I. Co. 124.9 171.5

Pioneer Mutual Insurance Co. Ltd.  
16, Crosby Rd., N. Watlington, Lpool. 051-928 6455  
Pioneer M.I. Ltd. 74.7 94.5

Planned Savings Group  
25 Windsor St., London, EC2A 2AB. 01-920 0661  
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Prudential Assurance Co. Ltd.  
44, Abchurch Lane, London EC4A 3DF. 01-621 1124  
1st First Investors 71.3 75.9  
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Standard Life Assurance Co. Ltd.  
4-5 King William St., EC4P 4HR. 01-626 9576  
Worth Ass. Co. 124.9 171.5  
Worth P.I. Co. 124.9 171.5

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Worth Ass. Co. 124.9 171.5  
Worth P.I. Co. 124.9 171.5

Standard Life Assurance Co. Ltd.  
4-5 King William St., EC







## INDUSTRIALS—Continued

[illegible]

## INSURANCE—Continued

[illegible]

## PROPERTY—Continued

[illegible]

## INVESTMENT TRUSTS-Cont

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## MINES—Continued

Australian						
Grade	Stock	Price	Last #	Buy #	Cw	YR 60
	Acme's 50c	45		02.5c		3.5
	ACM 20c	15				
	Argosy Gold N.L. 25c	136		010c	2.3	4.5
	Bond Corp.	282	12	005c	1.0	2
Apr.	Braemar 1/2 Kima	288	12			
	C.R. 50c	282	12			
	Cannara Manganese	282	12			
	Carr Bayed 20c	156				
	Central	156				
	Dry Mill N.L. 50c	9				
	Eureka Pacific N.L.	19				
	Explor. N.L.	20				
	Endevor 20c	26				
	G.M. McQueenie 25c	525	579	032c	6	3.8
	Greenbush 50c	90				
	Greenvale 25c	90		06c	1.9	4.1
Feb.	Hampton Assets 10p	245	294	2.5	3.1	2.5
	Imperial 50c	245				
	Intl. Mining	245				
	Jardine 50c	245				
	Kochie Min 20c	31				
	Kitchener N.L. 25c	11				
	Leahurst	22				
	Melitaform	380				
	Metals East 50c	380	349	003c	6	3.8
	Metals West 50c	380				
	Mid East Mines N.L.	212				
Apr.	M.L. Higgs 50c	245	152	015c	6	3.9
	Mission 50c	245				
	Newmont 20c	16				
	Northern 20c	170				
Nov	N.B. Hill 50c	120	10.13	018c	6	6.6
	Nth. Kalgarli	79				
	Nth. Manganese	120				
	N. West Mining N.L.	120				
Nov.	Oakbrook 50c	122	27.10	009c	6	3.3
	Pacific Copper	122				
	Pangloss 20c	144				
	Park 50c	122				
Oct.	Peko-Wallaced 50c	100	123	015c	2.3	
	Pelbart Res N.L.	17				
	Pelbart 25c	17				
	Southern Pacific	27				
	Stuart 25c	27				
	Vulcan Mines 20c	80				
	West Coast 25c	95	10c			
	Westfield 50c	122				
May	Wessex Mining 50c	251	28	014c	6	2.9
	Westrex	251				
	Wyre Resources	30				
Tins						
Apr.	Amal Nigeria Inc.	210	180	16.0		
Nov.	Ayer Himein \$41.1	210	180	16.0	1.6	1
	Barrick 50c	210				
	Gold & Base 12p	9	107	12		
	Gold Corp.	320	210	21.0		
Aug.	Goldcorp 50c	320	210	21.0		9.4
Sept.	Idria 10p	125	18	070c		
	Intan 12p	20	120	13.5		10.0
Apr.	Kamoa 50c	210	180	16.0		
May	Kinross \$41.1	210	180	16.0		3.0
	Kinross 50c	210	180	16.0		3.0
	Kinross 10c	30	27.11	02.63		
	Pengallan 10p	107	13	3.5		4.7
Apr.	Pengallan 50c	210	180	16.0		
Feb.	South Crofty 10p	240	28.12			
Aug.	Sagep Base \$41.1	195	28	0510c	1.1	35.9
Aug.	Sagep 50c	195	28	0510c		
	Tanganyika 50c	190	15.4	3.5	3.7	5.0
May	Tanganyika 10p	60	21.12	02.94c	6.4	7.7
Mar.	Tongkah N. Tin (Sn)	220	28.12	00.15	1.2	4
	Tongkah 50c	220				
Copper						
	Mission R.O. 50	320	29.4	045c	4.7	8.0
Miscellaneous						
Apr.	Anglo-Danish	10	30			
	Barrick Mines 10p	13	30	0.75	0.9	8.2
	Colby Res. Corp.	145				
Feb.	Colby 50c	270	30	020c	1.8	6.4
	Explor. Gold	62				
	Hammer	62				
	Hammer 10c	62				
	Norrbagge CS.	30	771			
July 17.	R.T.2. (Australia 7500)	515	18.5	16.0	2.8	4.6
	R.T.2. (Australia 7500)	515	18.5	16.0		18.7
	R.T.2. (Australia 7500)	515	18.5	16.0		
	Sabrosa Ind. CS.	210	20	024c		
	Sabrosa Ind. CS.	210	20	024c		
	Tina Expt. 50c	547				

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**NOTES**

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er allows for conversion of shares not now ranking for dividend ranking only for restricted dividend.

Other firms do not allow for shares which may also rank for dividend at future date. No P/E ratio usually provided.

## REGIONAL MARKETS

IRISH	
Conv. 9%	100.82
Govt. 5 1/2%	94.09
Irish 5 1/2%	97.62
Alliance Gas	212
Armco	435
Arnold (P.J.)	74
Carroll Foods	26
Heitman (Hidco.)	25
Irish Repres	64
Jacobs	54
Johnson	7 1/2

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.....	190	.....	Undere	.....	60	.....

House of Fraser	14	Unit Drapery	6 1/2
J.C.I.	18	Vickers	2 1/2
"Imps"	5	Woolworths	5
Leadbros	13	Property	
Legal & Gen.	10	Brit. Land	7
Less Service	10	Can. Counting	11

35	Joyas Bank	28	Land Secs.	30
18	"Loft"	32	MEPC	20
19	London Brick	7		

26	Lucas Inds.	18	Petroleum	28
26	"Mans"	11	Samuel Progs.	13
26	Whigs & Spenc	20	Town & City	24
12	Michelson Bank	25		
5	W. E. E.		Gas	
5	Nat. West. Bank	30	Brit. Petroleum	28
5	P. O. & D. Est.		Burmah Oil	11
7	Plessey	24	Chertwell	6
7	Racial Elect.	34	KCA	12
25	R.H.M.	5	Premier	28
25	Bank Corp. Ord.	5	Reed	23
25	Bank (cont.)	25	Tricentral	20
55	Seares	5	Ultramar	40
25	Tesco	5		

et.	16	Thorn EMI	38	James	
	44	Trust Houses	13	Charter Com.	21
	30	The Invest.	18	Com. Gold	40
	12	Turner & Newall	50	Rio T. Zinc	45
Slad.	25	Unilever			

**Recent Issues" and "Rights" Page 20**

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## Thatcher 'no' to political status for bombers

By Jason Crisp

IRA bombers will never be given political status, Mrs Thatcher said yesterday after visiting London hospitals to speak to the victims of Saturday's bombing.

She described the attack in which a woman died and 40 people were injured, including over 20 soldiers in the Irish Guards, as "cold, ruthless, brutal and sub-human." Those responsible were "criminals without regard for life or limb."

Commander Michael Richards, head of the anti-terrorist squad, yesterday warned the public to be alert for other devices and repeated his call for information on any suspicious people who had recently arrived in London, particularly from Ireland.

The police confirmed yesterday that the bomb had been triggered by remote control so it would explode as the coach with soldiers passed. It is the first time the IRA had used such a device in England, although it has been used on a number of occasions in Northern Ireland.

The bomb, which was in a Commer van parked by a zebra crossing in Ebury Bridge Road close to Chelsea Barracks, exploded at 12.10 pm on Saturday.

The bomb was exploded by a wire which ran up scaffolding outside a block of empty flats. It ran along the scaffolding at first-floor level for about 100 yards and down to the pavement.

The coach, approaching from Victoria Station, would have passed the bomber who would have been shielded from the blast by a wall. It is the first time the IRA has used a remote control device in England.

The van — registration number EAN 780J — was bought in East London on September 17 for £450 in cash and driven away immediately. On Friday night it was parked in a street off Ebury Bridge Road.

At about 8.30 am on Saturday one man was seen putting coins in the parking meter and another, wearing overalls, started tapping wire to the scaffolding.

At 11.30 am an attempt was made to start the van, which was then pushed by two of the bombers and a member of the public a short distance round the corner.

It was stopped by the zig-zag lines of the zebra crossing and exploded just over half-an-hour later.

Last night there were still 13 patients detained at Westminster Hospital including two children, eight soldiers, the civilian coach driver and the wife of a soldier. All were said to be "satisfactory" except for one soldier, who is still in intensive care and whose condition is described as "serious."

Three patients, including two soldiers, still detained at St Thomas's are all described as "satisfactory."

Police yesterday issued descriptions of four men they believe were involved in the bombing. The first two were seen with the van.

One is in his late 20s or early 30s, height 5 ft 10 in, with dark collar-length hair, a swarthy complexion and bushy moustache. He was wearing dark green overalls and a grey wollen hat.

The second, of similar age, height 5 ft 8 in, had collar-length hair and was of slim build. He wore a dark shirt, blue jeans and sandals.

The man who did the wiring described as 30, 5 ft 9 in tall, of stocky build and with blond hair. He was wearing a dark boiler suit. The fourth, seen feeding the meter, was described as just over 20 with long fair hair.

## FitzGerald may propose Anglo-Irish council

By Stewart Dalby

AN ANGLO-IRISH council operating at ministerial level and briefed to examine constitutional issues touching on all aspects of the Irish question may be proposed by Dr Garret FitzGerald, Prime Minister of the Irish Republic, when he meets Mrs Margaret Thatcher, the British Premier, in London early next month.

The projected meeting would be the first bilateral contact since Dr FitzGerald came to power in a Fine Gael/Labour coalition last July.

He is expected to use the occasion to encourage Britain to launch a new Anglo-Irish initiative seeking a political solution to the Ulster question; more immediately, he will aim to improve relations between the two countries in the wake of the ending of the prolonged hunger strike by Irish nationalist prisoners held in Northern Ireland.

The council might include Cabinet ministers from both countries initially. But Dr FitzGerald has said he is launching his crusade to win public support domestically to amend the Republic's constitution. Specifically, he seeks to alter Articles 2 and 3, through which the Republic claims sovereignty over all 32 counties of Ireland, including the six that make up Northern Ireland.

The Dublin premier hopes that by doing this, and also perhaps by removing the constitutional ban on divorce, Ulster's Protestant Unionists may accept some closer links with the Irish Republic.

Dr FitzGerald feels he has

made a first move in launching his proposal for constitutional change. However, any success he may have in changing the attitudes in the Republic may well be contingent upon the British Government's willingness to re-examine the constitutional arrangement with Northern Ireland.

Whether Mrs Thatcher will agree to a ministers council is questionable. Relations between the two Governments deteriorated in the summer as Irish ministers criticised Mrs Thatcher's handling of the hunger strike. The protest, now ended, resulted in 10 Republic prisoners starving themselves to death.

Joint Anglo-Irish studies at official level were initiated at the end of last year after a summit meeting between Mr Winterston and Mr FitzGerald's predecessor, and Mrs Thatcher. Mr Haughey hailed the decisions as an historic breakthrough in Anglo-Irish relations.

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## Government De Lorean statement likely today

By Kenneth Gooding, Motor Industry Correspondent

SIR MICHAEL HAVERES, the Attorney-General, is expected to make a statement today about the allegations of financial irregularities at the De Lorean sports car company.

Mr Nicholas Winterston, Tory MP for Macclesfield, who passed details of the allegations to the Prime Minister's Office, said yesterday that he would seek to raise the matter in the Commons.

"I will pursue it until I am satisfied that the allegations are totally unfounded, or in fact there is substantial truth behind them," he would call for a full-scale inquiry, "from A to Z."

Pointing out that some £80m of Government money had been allocated to De Lorean, Mr Winterston said: "People should be given the chance to make up their minds via a full-scale inquiry whether or not their money has been well spent."

The Attorney-General's statement will follow inquiries by Det-Chief Sir John George and Det-Chief Insp John Hefford of Scotland Yard's Serious Crimes Squad.

It has been stressed that these are "no more than the sort of routine steps which are taken over and over again, indeed must be taken when allegations of the type now being bandied about are made."

The two detectives have interviewed Mr Bill Haddad, communications director of De Lorean, in New York, about an inter-office memo said to have been sent by him to Mr John De Lorean, the company's founder.

A copy of the memo is among the papers passed to the Prime Minister's Office by Mr Winterston.

Mr Haddad's lawyer has said his client was the author of the memo, which is uninitialed and unsigned. The De Lorean company in New York said: "We have no record of Mr De Lorean ever having received it."

Mr De Lorean arrived in London from New York on Friday "to get everything straightened out," and has engaged the legal services of Lord Goodman.

The De Lorean plant in Belfast. The Government cash was channelled to the company via the Northern Ireland Development Agency.

The Northern Ireland Office, which has made no comment yet on the affair — not surprisingly, as Mr J. J. McLaughlin took over as Secretary for Northern Ireland only three weeks ago — may break its silence after the Attorney-General's statement is issued.

Meanwhile, Mr Don Concanon, Labour's shadow Northern Ireland Secretary and former Northern Ireland Minister, yesterday defended the deal that resulted in the De Lorean company being set up in 1978 with Government loans and grants.

He said the deal was "not as good as might perhaps have been expected from financial experts."

The basis for assessing this, however, was inevitably rather subjective and there are some odd results. Thus, only 15 per cent of respondents were judged to have a reasonable level of understanding of profit, and 80 per cent had only a vague or poor understanding of dividend yields. The authors suggest that in some cases the concepts may

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## THE LEX COLUMN

# Shareholders and sophistication

Institutional shareholders, and the stockbrokers' analysts who advise them, are in theory some of the most important users of company financial statements. If such shareholders are not supplied with an adequate flow of accurate financial information the capital market cannot allocate resources properly. So it is intriguing that a new study published by the English Institute of Chartered Accountants concludes that such investors are far from impressive in their ability to understand what company accounts are telling them.

The report is the sequel to an earlier analysis of what private shareholders were capable of grasping from the increasingly complex UK company annual report. Predictably, it was found that small shareholders made little use of financial statements, which were increasingly becoming documents prepared by accountants for accountants.

But does it matter so long as the stock market is dominated by a breed of professional, sophisticated investors? The researchers, Professor T. A. Lee and D. P. Tweedie, set out to establish whether it is right to assume that the market can work properly because of the existence of such financial sophistication. The response by investors to their approaches was distinctly uneven — the insurance companies were much more co-operative than the pension funds, for example, but they finally achieved a total of 281 interviews, of which 136 were with institutional investors and 95 with stockbrokers.

In sharp contrast to the small private shareholders, these financial experts certainly make comprehensive use of available financial information. Nearly all the respondents believed accounting information to be important to investment decision making, and nearly all believed they understood it. But then the authors set out "to ascertain whether or not their perceived understanding was compatible with their actual understanding."

All too often, the answer to this question turned out to be in the negative. The level of understanding was "not as high as might perhaps have been expected from financial experts."

The basis for assessing this, however, was inevitably rather subjective and there are some odd results. Thus, only 15 per cent of respondents were judged to have a reasonable level of understanding of profit, and 80 per cent had only a vague or poor understanding of dividend yields. The authors suggest that in some cases the concepts may

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have been so familiar that the respondents only gave casual answers.

More tangibly, the survey's results reveal that the attention of the professional investor is heavily slanted towards traditional historical cost information. Getting on for half the sample had little or no understanding of the main concepts of current cost accounting.

There was a relatively low level of use of the source and application of funds statement. In fact, the general lack of attention paid by analysts to cash flow surprised the authors, and one of their recommendations is that the investment community should pay much more attention to the need to predict liquidity as well as profitability.

More generally, Lee and Tweedie conclude that the investment community needs to pull its socks up in the area of accounting comprehension. Nowhere is this required more than in the more senior levels of the fund management profession, where the survey reveals that the older respondents have often failed to keep up to date.

Meantime, their advice to the accounting profession is that the investment community needs to be much more closely involved in the process of setting accounting standards. They point out that the interim report is one of the most highly rated by investors in terms of its influence on investment decisions, yet is not regulated by any accounting standards or guidelines.

\*The Institutional Investor and Financial Information, by T. A. Lee and D. P. Tweedie. The Institute of Chartered Accountants in England and Wales, £15.

Dean Witter

The ranks of independent U.S. securities companies were looking even thinner last week after Sears, Roebuck, the U.S. retailing giant, announced a \$600m agreement to buy Dean Witter Reynolds, the 8th largest securities group on Wall Street.

Dean Witter is the seventh securities company to be swallowed through merger or acquisition this year, and its disappearance leaves only five quoted securities firms on the New York Stock Exchange. The market in two of these — Paine Webber and Donaldson Lufkin Jenrette — is already limited by the presence of a single large holder. So the strong rise in the share prices of E. F. Hutton et alia last week probably owed something to their growing scarcity value, as well as to speculation about further activity.

Sears is paying a healthy premium for Dean Witter. The cash and equity offer is worth \$50 per share, which is more than twice book value and roughly 11 times fully diluted earnings for the year to August 1981. Dean Witter's record is a little patchy, and acquisition will not improve its sensitivity to Sears' own problems. Moreover, the offer will almost certainly result in earnings per share dilution for Sears shareholders. At present, the equity component of the bid would leave Dean Witter shareholders with Sears stock representing dividends of 44¢ and asset backing of about \$74 for a Dean Witter share yielding \$0.80 and carrying a book value of \$23.

However, Sears should achieve a considerable economies by grafting Dean Witter on to its data processing and marketing network. As Sears claims that 57 per cent of all U.S. families use its credit facilities in some way, it is obviously well placed to build up a financial services conglomerate aimed at the consumer.

In one respect at least, last week's offer left a rather sour taste. The two companies were obliged to bring forward their announcement by some sinister movement in Dean Witter stock. The shares had jumped by about a third in two days.

Economics growth

Brokers Simon and Coates new "Economics Analyst" sporting a glossy, coloured cover and running to 60 pages — seems to be designed to leapfrog some of the already heavyweight competition in the field. Within its pages the eager investor may pursue material as diverse as a table on vehicle sales in Singapore, or a chart of the spectral density function for the random noise of a vacuum tube.

It is not just Simon and Coates who are mounting an attack on broker publisher territory originally carved up by Phillips and Drew. Another part of P and D's coverage — the firm's Red Book on equities — market indicators — will come under attack shortly from Hoare Govett and James Capel. With commissions pegged services like these are one of the few ways in which brokers can compete for market share. The question whether clients will be impressed, or whether they will conclude that the flood of expensively produced literature must mean that commissions are too high.

## Dock strike could 'mean disaster'

FINANCIAL TIMES REPORTER

THE LOSS-MAKING port of Liverpool is expected to be at a standstill from this morning because of an indefinite strike over manning levels by the port's 3,300 dockers.

Officials of the Mersey Docks and Harbour Company, the port's largest employer which has already lost some £2.4m in the first six months of this year, warned that the strike could mean "the difference between survival and disaster" for the port.

The decision to stop work, taken at a mass meeting of half the port's dockers in Liverpool yesterday, follows the introduction only weeks ago, after months of protracted negotiations, of a pay and productivity agreement.

Work will be halted today on more than 20 vessels. Others are likely to be diverted and employers fear trade will be lost irretrievably if the stoppage is prolonged. The Liverpool-Isle of Man passenger service is expected to operate normally, but cargo services are likely to be hit.

Only a handful of dockers at the meeting voted against the recommendation from the Mersey Docks shop steward to strike in support of 500 men employed by the Liverpool Maritime terminals.

The men have been on strike since last Wednesday halting work on three freighters in the Liverpool Huskisson Dock area following a walkout on one

vessel on which a cargo in the hold had shifted.

The dockers called for reinforcements and the gang of four men was stepped up to six but when they demanded another two it was rejected.

The employers have insisted throughout that changes in working practices were essential to make the package self-financing. The most sensitive change was a reduction in manning levels, opposed throughout by the transport workers' negotiators.

After the meeting, Mr Denis Kelly, chairman of the shop stewards said: "We have been instructed by our officials and no other decision could be made."

Continued from Page 1

## Gas pipelines

The North Sea, straddles the median line between the UK and Norwegian sectors. The smaller UK portion of the field may provide 60m cubic feet a day of gas.

Such a flow rate could provide Shell and Esso with a problem because the Flaga pipeline will have limited spare capacity. The line was designed to carry 1bn cubic feet a day — over a fifth of the UK's average daily requirement. But production from the Brent Field alone could amount to 780m cubic feet a day of methane (natural gas) and gas liquids.

Mobil, operator of the Beryl Field, confirmed at the weekend that it was investigating alternative ways of landing its natural gas. "One of these options includes a new pipeline," the company said. "We are also talking with other companies about possible joint schemes."

Continued from Page 1

Companies claimed that their systems could be developed more economically than the ill-fated gas gathering network, partly because their lines would use existing facilities and partly because they would be built in stages, when gas transportation was needed.

They also said pipeline developments could only be justified if British Gas offered commercial prices for gas supplies.

Companies have long complained that old contracts, covering supplies from the southern sector of the North Sea, have unrealistically low prices — less than 5p a therm compared with the 29p a therm charged by British Gas to industrial and commercial contract customers.